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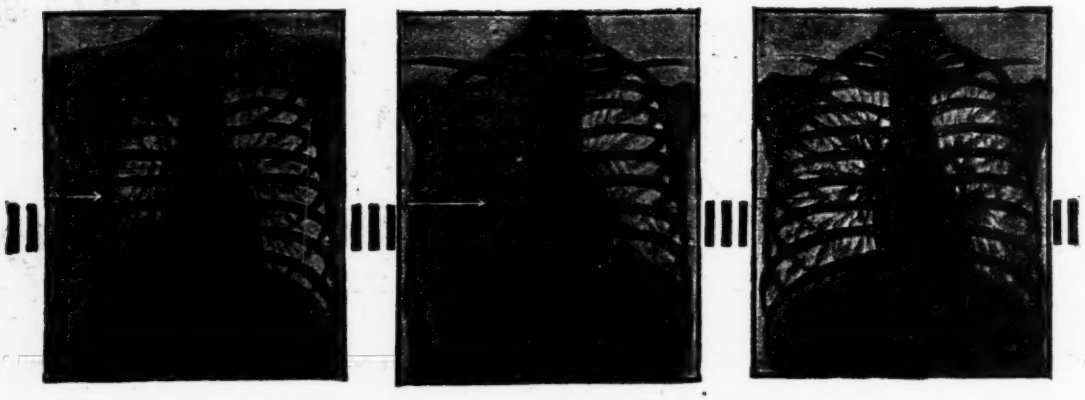

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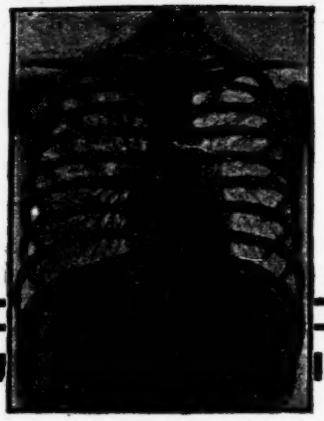

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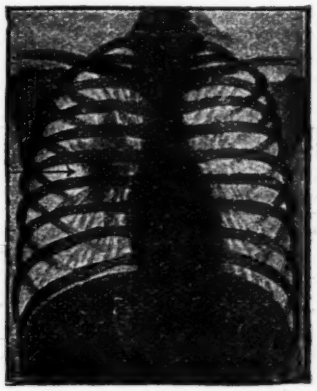

THE PRESENT POSITION OF LEAD THERAPY IN MALIGNANT DISEASE.*

BY

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INTRODUCTION.

AT the outset it is advisable once more to express the conviction that by prevention only shall we stay the onward march of cancer. Elsewhere[5] we have dealt with this aspect of the problem, and have indicated that success in this sphere can be accomplished only if we take into account the numerous sources of, and factors concerned in, the irritation of the human tissues that may result in the precancerous state. On the other hand, the alleviation and cure of cancer, once the disease has developed, appears not to be related to the etiology as such, but rather to the nature of the cancerous process to be arrested by all the remedial measures at our disposal. Until recently these measures have consisted almost entirely of surgical and radiological procedures, and no impression seems to have been made on the rate of increase in the mortality rate. Clearly, the mortality figures must have been reduced in direct proportion to the number of cases saved, but these have been too few in number to counterbalance the increased incidence rate of the disease, which appears in a great measure to be due to the prolongation of life in civilized communities.

In our opinion the saving of more patients stricken with the disease—often men and women in the heyday of their mental attainments and of their value to mankind—will ultimately come through chemotherapeutical or biochemotherapeutical methods. In regard to the latter, immunifacient and cytotoxic effects by means of specific biological substances were first attempted by us twenty years ago, and are still under consideration. The local treatment of malignant affections has almost, if not quite, reached standardization.

CHEMOTHERAPY IN CANCER.

Successful chemotherapy is particularly difficult even in connexion with the destruction of parasitic organisms that have gained entrance to the body, but in this direction great advances have been made during recent years. When, however, we attempt the elimination by synthetic products of certain cells developed from, and dependent on, ordinary somatic tissues—"organochemotherapy," as it is called—we are faced by many grave difficulties, and we shall probably be held up in our search for substances with a high organochemotherapeutical index until further investigations have been made concerning the functions of the reticulo-endothelial system, and in regard to the physicochemical conditions in which drugs exert their actions on living tissues. Research work along these lines is in its infancy, but nevertheless must be properly appreciated without delay.

The reasons why we adopted the metal lead as our primary constituent for the chemotherapeutical treatment of cancer have so often been stated that no further explanation is necessary.† A point of importance associated with our work is that the encouragement received from the use of crude products has been sufficient to urge us forward to seek improvements especially in the direction of organic complexes containing lead, and, in a general way, hope of ultimate success in the treatment of malignant disease by chemotherapeutical measures has been kindled in others. It is our earnest desire to foster this hope in order that many more labourers may enter this promising field. Interest can best be promoted if we recall a few only of the encouraging developments we have witnessed during our work, and attempt to discover why we have been rewarded with a certain measure of success in the cases now described, some of which have been recorded on previous occasions.

COMBINED TREATMENT OF CANCER.

We have mentioned the utilization of all the remedial agents at our disposal in the treatment of cancer, and it is certain that no doctor, no one with humanitarian instincts, would do otherwise than place the safety and cure of his patients foremost in his mind. It will be seen, then, that not all of our patients have been treated by lead alone. Whenever practicable, we have felt it desirable to assist this treatment by the removal of as much of the growth as possible, the subsequent treatment with lead being commenced immediately. In many cases, too, we have utilized our knowledge of the augmented effect of x rays and radium acting in conjunction with lead, and of the fact that this combination may enable us to obtain satisfactory results with smaller doses of each than would be effective if either were employed alone. This, no doubt, may be open to the criticism that in those cases in which combined treatment has been practised it is impossible to say which agent has produced the beneficial result, when this has been obtained. But, even though we do regard the dictates of humanity, surely we have ample evidence in favour of the use of lead, for in a number of cases in which some preparation of this metal has alone been used recovery has followed. So, too, we now have the knowledge, not only as the result of our own observations, but also of those of Carter Wood,[10] Mottram,[7] and others,[8 9] that while x rays, radium, and lead may each produce a beneficial effect when used separately, an aggregate effect is secured when lead and x rays or lead and radium are applied within a short time of one another.

It will be found, therefore, that some of our cases were treated by lead alone, others by operation followed by lead, and again others by lead and x rays or radium.

INDICATIONS AND CONTRAINDICATIONS FOR TREATMENT WITH LEAD.

We have emphasized the fact that in respect of our present practice the general condition of the patient is of paramount importance. With increased experience we have come to regard the situation of the malignant neoplasm as of lesser importance, and to-day we certainly should neither exclude cancer of the lung nor malignant disease of the central nervous system.

The question of malignant disease of the liver and of a kidney is, however, more difficult, for in the general examination of the patient we lay considerable stress on the integrity of the functions of these organs. It will readily be appreciated that if either be already affected with malignant disease, or be otherwise previously damaged, there is a greatly increased risk of adding to their functional distress by the administration of lead. At any rate in such circumstances great caution is required.

It may be interesting to recall one case (248) in which there was carcinoma of the left kidney. Careful examination revealed the fact that the right kidney was absent. To have treated a patient with lead in these circumstances would have been to court disaster.

Apart from lesions in these two organs, we must also take into consideration the state of the heart and blood. Severe myocardial insufficiency necessitates the most cautious use of lead, and serious anaemia with a low red-cell count precludes the use of this substance until considerable improvement by blood transfusion or other measures has been effected. In the last place, we must also take into careful account the general condition of the patient in regard to acidosis with ketonuria and other constitutional states.

In malignant disease the progress to a fatal issue varies in different patients in a remarkable manner. In some—usually the young—the course is so rapid that the general condition of the patient appears to be little affected until the very end. In others—for the most part the aged—the disease progresses very slowly and appears to produce

* A post-graduate lecture, with lantern illustrations, delivered under the auspices of the British Empire Cancer Campaign and the Leeds and West Riding Medico-Chirurgical Society, in the Medical School, Leeds, on January 9th, 1929. This investigation was undertaken on behalf of the Liverpool Medical Research Organization.

† The chief matters of interest in this connexion were demonstrated.

no serious constitutional disturbance for a very long time. In most patients, however, the malignant process advances at a steady rate, undermining the constitution of the patient, however strong he may previously have been, and sapping his vitality, until what we describe as a condition of profound cachexia supervenes. Now it is in the presence of a state of definite cachexia that we must hold our hand. So long as the patient is in good condition, with a prospect of about six months of life, if other things are equal, treatment may be contemplated. In this matter considerable judgement and prognostic acumen are necessary.

METHODS OF TREATMENT WITH LEAD.

Dosage.—In a general way it may be said that we have tended gradually to decrease the individual doses, while aiming steadfastly at the administration of a high total quantity of lead—that is, 0.5 gram to 0.8 gram or a little more. In a number of cases we have been successful with a smaller total quantity than 0.5 gram of lead, which we believe to be the minimum amount desirable in ordinary circumstances. On the other hand, we have given nearly 1 gram of lead before obtaining a satisfactory final result. Empiricism in this matter is quite impossible; the greatest consideration and care are required if safety to the patient is to be ensured, and a successful result obtained.

Material.—For almost the entire part we have employed a suspension of metallic lead prepared by Professor Lewis and his associates, and the colloidal preparation of lead phosphate made by Professor Heilbron and those working with him. For a time we used a suspension of lead selenide, but this appeared to be almost too stable to give good results, although it is not inert; it is, however, singularly atoxic. Lead-selenium has, however, been successfully employed by Dr. Todd of Bristol,[9] who was the first to make and use this preparation of lead.

Administration.—Injection of the material into a vein in the arm has been by far the most common method of administration. We have, however, in a few cases, injected the preparation into an artery. Two cases of malignant disease in limbs will be mentioned in which this procedure has been practised, apparently, and so far, with promising results. We look forward to the obvious advantages and possibilities of this route in the treatment of malignant disease of the limbs, mouth, and other regions with a readily available and convenient arterial supply. In a few of our earlier cases intramuscular injections were employed. Ionization with lead of malignant ulcers is, too, a mode of attack which we have practised. We have already referred to the beneficial results that may be obtained by the application of *x* rays or radium at an interval of four days following the administration of lead.

Mobilization.—We apply this term to the process of bringing the lead that is stored in the body again into the circulation, from which it may be taken up by the growth, if this still be present, or excreted. Some years ago we were faced with the difficulty that in certain patients, who had received what we considered the maximum quantity of lead that could be given with safety, the neoplasm was still in existence or had recurred. It occurred to us to mobilize the lead still remaining in the body by the administration of acids or other chemical substances; and we found this possible. Sometimes stippled erythrocytes reappeared in the blood, and excretion by the urine and faeces was increased. We have, however, no direct evidence that the growth takes up the lead in these circumstances. We are at present inclined to think that the metal already attached to the tumour may be released; and in some cases (for example, patient 185 quoted below) the growth which has not entirely disappeared but is arrested may thereby be released from control and start afresh to develop. Consequently, we now hold the view that so long as any growth remains mobilization must not be practised. Indeed, this procedure should be reserved for those cases in which there has been no sign of neoplastic development for several years, and in which it is desirable that the liver and kidney functions should be normal, as in patient 77 recorded below.

There is no doubt that lead tends to be eliminated from the body in the course of time, and this itself may be a source of anxiety in respect of the possibility of recurrence. It appears most profitable to maintain a supply of lead in the tissues until all danger of recurrence is long past, for we have observed that in such circumstances the placenta in pregnancy several years subsequently (see patients 77 and R. I. 39 described below), and therefore probably a neoplasm, is capable of taking to itself lead from that stored as the result of previous treatment.

GENERAL CHARACTER OF RESULTS.

One of the difficulties that have arisen in the general appraisement of results has been due to the different methods of tabulation adopted by various authors. Those unable to appreciate evidential values have taken the definite stand of "all or nothing"—that is, absolute cures or failures alone, in their view, are worth recording. Moreover, the primary condition attaching to all forms of scientific treatment—namely, that the method adopted shall be properly applied—has not infrequently been ignored. In this connexion it will be found that where a series of failures has been recorded the patients have been so ill that treatment could not be completed, or that the treatment was so conducted that the patients died as the result of it. Such groups of cases should be excluded from any estimation of the effect of treatment—they have no evidential value at all.

Again, it cannot be too forcefully reiterated that in the early application of any new method, however important an absolutely curative effect may be, *arrest and alleviation of the disease must equally be taken into account*, for such phenomena afford a valuable indication of the correctness of the principle of the treatment adopted, and give promise of the fruits of complete victory if the pursuit be pressed.

There is another phenomenon of great interest that has been observed by ourselves and others, concerning which we shall have more to say directly. We refer to the complete arrest or even disappearance of the growth with reappearance after a short or a considerable length of time. From this we may provisionally conclude that it is advisable to continue in a modified form the treatment over a longer period of time than previously considered necessary.

Finally, it may be suggested that in all cases in which a beneficial effect is obtained, the restoration of the natural vital processes plays a part in the result.

CERTAIN CASES TREATED WITH LEAD.*

The number of cases described under this heading are arbitrarily limited by space only, and they are merely representative of the results that may be expected if the work be properly conducted. In two or three cases we have had to accept the statement of the surgeon concerned as to the nature of the primary neoplasm; consequently we think that the interests of truth will best be served if we record the names of those connected with all the cases presented.

(A) *Cases in which the Primary Growth was Treated with Lead alone.*

In this group are included some cases in which the abdomen was opened to secure specimens of growth for histological examination, or the immediate relief of symptoms and physical states, such as intestinal obstruction.

1.—Female, aged 36; married; 3-para.
Diagnosis.—Carcinoma of left breast (section +) with glands in axilla. Pronounced inoperable by Professor R. E. Kelly and Mr. Frank Jeans.
Treatment.—Intravenous injections of partly colloidal lead iodide commenced on November 9th, 1920. Total quantity administered approximately 0.3 gram Pb. Severe reaction.
Subsequent History.—Now alive and well more than eight years later. Two more children; both suckled at previously diseased breast.

77.—Female, aged 27; married; 5-para.
Diagnosis.—Sarcoma small intestine (section +).
Treatment.—Intestinal anastomosis for obstruction by Professor Kelly. Growth irremovable. Intravenous injections of partly colloidal lead iodide commenced February 26th, 1923. Total quantity administered 0.45 gram Pb. Very slight reaction.

* In our forthcoming work on *Some Aspects of the Cancer Problem*, to be published by Messrs. Baillière, Tindall and Cox in the spring or early summer, the cases, here recorded very briefly, are given in more detail and are illustrated. Moreover, in this book there will be additional case records and tables, now omitted owing to exigencies of space.

Subsequent History.—Growth disappeared and, so far as original disease was concerned, patient remained well for over five years. Unfortunately she died of toxaemia of pregnancy in May, 1928.

112.—Female, aged 50; married · 2-para.
Diagnosis.—Carcinoma of liver and peritoneum (section +).
Treatment.—Paracentesis twice under the care of Professor John Hay. Exploratory laparotomy. Intravenous injections of partly colloidal lead iodide commenced August 3rd, 1923. Total quantity administered 0.345 gram Pb. No reaction.
Subsequent History.—The patient now alive and well five and a half years later.

185.—Female, aged 27; unmarried; medical student.
Diagnosis.—Retroperitoneal sarcoma (section +).
Treatment.—Exploratory laparotomy. Intravenous injections of colloidal lead commenced April 15th, 1925. Slight reaction, quick recovery. Total quantity administered 0.75 gram. No scholastic examination missed during treatment.
Subsequent History.—Now alive and well nearly four years later, though some evidence of a small arrested growth to be made out on palpation. At present holding resident hospital appointment.

R. I. 9.—Female, aged 45; unmarried.
Diagnosis.—Sarcoma of third lumbar vertebra, which was destroyed (*x* ray +).
Treatment.—Intravenous injections of colloidal lead commenced July 27th, 1925. Total quantity administered 0.55 gram Pb. Steady improvement. Slight reaction.
Subsequent History.—Now alive and well three and a half years later, except for occasional pain in region of deformity.

352.—Female, aged 66; unmarried.
Diagnosis.—Squamous carcinoma of larynx—left arytenoid (section +).
Treatment.—Intravenous injections of colloidal lead phosphate commenced March 8th, 1928. Total quantity administered approximately 0.5 gram Pb. Slight reaction. Gradual diminution of tumour.
Subsequent History.—Patient is alive and doing well. Last report from laryngologist—Mr. H. V. Forster—(December 10th, 1928): "The left arytenoid from which I removed a piece [previously] . . . is now pale in appearance, and in colour is similar to the right one."

R. I. 39.—Female, aged 37; married; 9-para.
Diagnosis.—Carcinoma of rectum with glands, associated with pregnancy. (No section.)
Treatment.—Exploratory laparotomy and colostomy by Mr. Kennon. Intravenous injections of colloidal lead commenced July 3rd, 1926. Total quantity administered 0.465 gram Pb. Slight reaction. Normal pregnancy and confinement.
Subsequent History.—Premature delivery April, 1928. Patient alive and well two and a half years later. No evidence of disease.

R. I. 102.—Male, aged 60.
Diagnosis.—Squamous carcinoma of floor of mouth (section +). Glands in the neck.
Treatment.—Radium (80 mg.) applied by Mr. Frank Jeans to floor of the mouth for twenty-four hours (August 18th, 1927). Intravenous injections of colloidal lead selenide commenced September 1st, 1927. Total amount administered 0.45 gram Pb. No reaction. Glands in neck gradually disappeared under treatment, and the ulcerated area in floor of mouth healed and thickening disappeared.
Subsequent History.—Patient now alive and well one and a half years later.
Comment.—Improvement and disappearance of primary growth and glands could hardly have been caused by single dose of radium.

N. H. 22.—Male, aged 69.
Diagnosis.—Carcinoma of g[illegible]bladder. (No section.)
Treatment.—Exploratory laparotomy by Mr. J. H. Rawlinson. Intravenous injections of colloidal lead commenced August 19th, 1925. Total quantity administered 0.44 gram Pb. Occasional vomiting during treatment.
Subsequent History.—Now alive and well three and a half years later. Some thickening in neighbourhood of scar.

N. H. 53.—Male, aged 59.
Diagnosis.—Carcinoma of splenic flexure of colon. (No section.)
Treatment.—Operation for obstruction by Mr. Oldham, June, 23rd, 1927. Fixed tumour size of orange; numerous glands. Anastomosis. Intravenous injections of colloidal lead commenced August 10th, 1927. Total amount administered 0.55 gram Pb. No reaction noted.
Subsequent History.—Now alive and well one and a half years later. Increased in weight 2 st. No tumour palpable.

N. H. 25.—Male, aged 42.
Diagnosis.—Carcinoma of ampulla of Vater. (No section.)
Treatment.—Gastro-enterostomy by Mr. G. C. Simpson. Intravenous injections of colloidal lead commenced June 8th, 1925. Total quantity administered 0.6 gram Pb. No reaction.
Subsequent History.—Now alive and well three and a half years later. No evidence of disease.

(B) *Treatment of the Primary Growth by Incomplete Operation and the Subsequent Administration of Lead.*

The following cases, in which the growth was primary, are illustrative of partial—that is, *definitely incomplete*—operative procedures, as determined at operation by the recognition of malignant tissue left, or by histological examinations of pieces excised from the edge of the growth removed or from the irremovable part of the growth remaining *in situ*.

192.—Female, aged 60; married; 1-para.
Diagnosis.—Squamous carcinoma of cervix, invasion of parametrium (sections +).
Treatment.—Partial removal by abdominal route on July 18th, 1925. Intravenous injections of colloidal lead commenced August 4th, 1925. Total quantity administered 0.61 gram Pb. Malignant mass left in pelvis observed gradually to disappear. Very slight reaction.
Subsequent History.—Now alive and well three and a half years later.

221.—Female, aged 55; married; 0-para.
Diagnosis.—Carcinoma of body of uterus with three vaginal metastases (sections +).
Treatment.—Hysterectomy by Dr. R. A. Hendry, December 15th, 1924. Intravenous injections of colloidal lead commenced December 31st, 1924. Total quantity administered 0.69 gram Pb. Nodules in vagina observed gradually to disappear. Slight reaction.
Subsequent History.—Patient well for one and a half years, then evidence of regenesis in vagina. Diathermy; mobilization. Patient now well after a further lapse of one and a half years. No evidence of disease.

64.—Female, aged 47; married; 5-para.
Diagnosis.—Spheroidal carcinoma of breast, with invasion of muscle and large axillary glands (sections +).
Treatment.—Excision, December 24th, 1922. Intravenous injections of partly colloidal lead iodide commenced January 2nd, 1923. Total quantity administered 0.43 gram Pb. Mobilization. No reaction.
Subsequent History.—Now alive and well six years later.
Comment.—Operation incomplete on examination of specimen (Professor Bloodgood).

N. H. 18.—Female, aged 34; married; 0-para.
Diagnosis.—Columnar carcinoma rectum (section +).
Treatment.—Excision of rectum by Mr. G. C. Simpson, November 17th, 1924. Several adherent glands left on sacrum. Intravenous injections of colloidal lead commenced January 2nd, 1925. Total quantity administered 0.455 gram Pb. No reaction.
Subsequent History.—There has been a recto-vaginal fistula since the operation. Patient now alive and free from disease four years later.

R. I. 4.—Female, aged 52; married; 3-para.
Diagnosis.—Extensive squamous carcinoma cervix (section +).
Treatment.—Vaginal hysterectomy, September 25th, 1924. Disease left in the broad ligaments and to edge of specimen (sections +). Intravenous injections of colloidal lead commenced December 16th, 1924. Total quantity administered approximately 0.5 gram Pb. No serious reaction.
Subsequent History.—Now alive and well four years later.

R. I. 70.—Male, aged 51.
Diagnosis.—Secondary carcinoma of glands of neck (section +).
Treatment.—Operations by Mr. Woolfenden April 27th, 1926, and February 8th, 1927; growth was almost certainly left behind at the second operation. Intravenous injections of colloidal lead selenide commenced February 17th, 1927. Total amount administered 0.465 gram Pb. Slight reaction.
Subsequent History.—Now, nearly two years later, general condition good and there is no evidence of growth.
Comment.—It is hardly possible that the patient was cured by the operations, especially as *the primary growth was never identified*, but was probably in the mouth, which was in an unhealthy condition with papillary stomatitis.

N. H. 27.—Female, aged 37; married; 0-para.
Diagnosis.—Carcinoma of stomach (section +).
Treatment.—Operation by Mr. G. C. Simpson, November 13th, 1925—partial gastrectomy. Glands very much enlarged and hard; not removed. Intravenous injections of colloidal lead commenced December 3rd, 1925. Total quantity administered 0.45 gram Pb. Some reaction.
Subsequent History.—Patient now alive and well and free of symptoms, with gain in weight, 3 years later. No evidence of disease.
Comment.—This case obviously could not have been cured by operation alone as the involved glands were left.

(C) *Cases in which Recurrence occurred after Removal of the Primary Neoplasm, and which were Subsequently Treated with Lead.*

A large proportion of all cases received by us for treatment has included those in which there has been recurrence at some period after operation performed elsewhere. As we have indicated, we prefer to treat the primary growth ourselves in order that treatment may be commenced immediately after operation, rather than to treat patients in whom there is a definite recurrence. In the latter circumstances the patient is usually in poor condition, and the disease is often much more widespread than can

be recognized. These patients are difficult to cure; still we have had a number of apparent successes, a few of which are recorded below. In those cases in which a primary operation performed by others had been followed by recurrence obviously the operation cannot be taken into account as an accessory factor in the ultimate recovery of the patient.

110.—Female, aged 57; married; 5-para.
Diagnosis.—Recurrence after operation for spheroidal carcinoma of right breast (section +).
Treatment.—Excision by Mr. Battle, March, 1922; second operation by Mr. Maynard Smith, May 21st, 1923, for lump above clavicle. Further evidence of recurrence. Intravenous injections of partly colloidal lead iodide and colloidal lead commenced July 27th, 1923. Total quantity administered 0.2065 gram Pb. No reaction.
Subsequent History.—Alive and well five and a half years later.

201.—Female, aged 50; unmarried.
Diagnosis.—Scirrhous carcinoma of left breast with extensive local recurrence on chest wall, glands (section +), and left lung (*x* ray and aspiration).
Treatment.—Intravenous injections of colloidal lead commenced December 16th, 1925. Total quantity administered 0.7 gram Pb. Slight reaction.
Subsequent History.—The extensive disease was considerably reduced, and after two and a half years the general condition of the patient was much improved. Unfortunately she died of acute pneumonia following a chill in August, 1928.

216.—Female, aged 62; unmarried.
Diagnosis.—Recurrent spheroidal carcinoma of left breast involving rib (section +).
Treatment.—Intravenous injections of colloidal lead commenced January 13th, 1926. After 0.3 gram administered, suspension for four months. Scar tissue showed "very atypical regressing almost unrecognizable spheroidal-celled carcinoma." Further injections, making total quantity 0.575 gram Pb. Slight reaction. Later mobilization. Small recurrence removed December 6th, 1928. Radium, followed six days later by an injection, making total quantity 0.6 gram Pb. received.
Subsequent History.—Quite well at the present time.

161.—Female, aged 60; married; 1-para.
Diagnosis.—Scirrhous carcinoma of left breast (section +). Recurrence local and at root left lung (*x* ray, Dr. Finzi).
Treatment.—"Radical" excision by Sir Lenthal Cheatle of left breast, May 12th, 1924. Intravenous injections of colloidal lead commenced August 8th, 1924. Total quantity administered 0.595 gram Pb. Severe delayed reaction after completion—vomiting for fourteen days; then complete recovery.
Subsequent History.—Believed to be now alive and well four and a half years later. Last letter received November, 1926.

169.—Female, aged 47; married; 0-para.
Diagnosis.—Scirrhous carcinoma left breast (section +). Recurrence in supraclavicular and axillary glands, and local.
Treatment.—"Radical" excision by Sir Lenthal Cheatle, January, 1923. *X*-ray applications by the late Dr. A. Reid. Sir Lenthal Cheatle discovered recurrence in August, 1924. Intravenous injections of colloidal lead commenced September 17th, 1924. Some reaction occasionally. Total quantity administered 0.6 gram Pb.
Subsequent History.—Now alive and well four and a half years later.

R. I. 51.—Male, aged 67.
Diagnosis.—Squamous carcinoma of lip (section +) with glands in the neck.
Treatment.—Excision of primary growth by Mr. Woolfenden, May 25th, 1926, and excision of glands by Mr. Nuttall, July 9th, 1926. Definite recurrence two months later: a large hard fixed mass in neck. Intravenous injections of colloidal lead commenced September 11th, 1926. Total amount administered 0.4 gram Pb. No reaction.
Subsequent History.—Now alive and well, no evidence of disease nearly two and a half years later.

(D) *Treatment of the Primary Growth by Operation and the Subsequent Administration of Lead.*

The next group we shall consider is that in which operation for the primary growth was performed in Liverpool, with three exceptions, and the patients treated immediately. This method has, of course, been largely employed, and the successful results are many; consequently we naturally prefer to treat cases of malignant disease ourselves from the time the diagnosis is first made. It must, of course, be admitted that in some of the patients the disease may have been entirely removed at operation. An attempt will be made to indicate the chances of this occurrence in regard to the cases described; in many it will be obvious that the prognosis subsequently to operation alone would have been very bad. Moreover, the character of the operation must be taken into account—for example, vaginal hysterectomy for cancer of the cervix, of which the first four are examples.

30.—Female, aged 31; widow; 3-para.
Diagnosis.—Squamous carcinoma of cervix (section +).
Treatment.—Amputation of cervix, October 9th, 1921. Intravenous injections of partly colloidal lead iodide commenced November 1st, 1921. Total quantity administered 0.768 gram Pb. No reaction. Subsequently vaginal hysterectomy—safety measure—December 4th, 1922; no evidence of cancer found (sections −).
Subsequent History.—Now alive and well more than seven years later.
Comment.—Operation alone might have cured this patient, but her youth made prognosis unfavourable.

139.—Female, aged 49; widow; 1-para.
Diagnosis.—Squamous carcinoma of cervix (section +).
Treatment.—Vaginal hysterectomy, February 24th, 1924. Intravenous injections of colloidal lead and partly colloidal lead iodide commenced March 7th, 1924. Total quantity administered approximately 0.3 gram Pb. No reaction.
Subsequent History.—Now alive and well nearly five years later.
Comment.—Prognosis after operation alone was unfavourable owing to the advanced stage of the disease.

155.—Female, aged 42; married; 6-para.
Diagnosis.—Squamous carcinoma of cervix (section +).
Treatment.—Vaginal hysterectomy, June 17th, 1924. Involvement of the parametrium probable. Intravenous injections of colloidal lead commenced July 9th, 1924. Total quantity administered 0.21 gram Pb. No reaction.
Subsequent History.—Now alive and well four and a half years later.
Comment.—Prognosis after operation alone would have been unfavourable. The small quantity of lead administered was due to the fact that the patient suffered with old renal damage before treatment commenced.

R. I. 82.—Female, aged 58; married; 6-para.
Diagnosis.—Extensive squamous carcinoma of cervix (section +). Mitral stenosis; hyperpiesis. Wassermann reaction ++.
Treatment.—Vaginal hysterectomy, May 16th, 1927. Intravenous injections of colloidal lead selenide commenced May 26th, 1927. Total quantity administered 0.37 gram Pb. Slight reaction. Blood pressure raised.
Subsequent History.—Alive; no evidence of pelvic disease more than one and a half years later.

In view of the great malignancy of sarcoma uteri, apart from the spindle-celled variety arising in fibromyoma, the following cases are of interest.

88.—Female, aged 61; unmarried; nursing sister.
Diagnosis.—Mixed-cell sarcoma of uterus (section +) and carcinoma of right ovary (section +).
Treatment.—Abdominal panhysterectomy with removal of appendages, April 28th, 1923. Intravenous injections of partly colloidal lead iodide commenced May 8th, 1923. Total quantity administered 0.2 gram Pb. No reaction.
Subsequent History.—Now alive and well over five and a half years later.
Comment.—The small quantity of lead administered was due to the diminutive size of the patient and her frailty.

C. I. 1.—Female, aged 59; unmarried.
Diagnosis.—Large round and multinucleated celled sarcoma of the uterus (section +).
Treatment.—Panhysterectomy with right salpingo-oöphorectomy, January 22nd, 1927. Intravenous injections of colloidal lead commenced February 12th, 1927. Total quantity administered 0.4 gram Pb. No reaction.
Subsequent History.—Now alive and well two years later, a period of time sufficient to state that the patient is "clinically cured" of this form of malignant disease.

The following cases of advanced carcinoma mammae with involvement of the axillary glands, in which the prognosis after operation alone would have been extremely grave, seem to be worth placing on record.

57.—Female, aged 38; married, 4-para.
Diagnosis.—Spheroidal-celled carcinoma of left breast and axillary glands (sections +).
Treatment.—"Radical" operation, November 13th, 1922. Intravenous injections of colloidal lead commenced November 21st, 1922. Total amount administered 0.578 gram Pb. No reaction. Mobilization.
Subsequent History.—Right breast excised October 27th, 1924; "chronic mastitis" (section −). Patient now alive and well six years later.
Comment.—Prognosis after operation alone very grave.

221.—Female, aged 59; widow; 0-para.
Diagnosis.—Spheroidal-celled carcinoma of left breast and axillary glands (sections +).
Treatment.—"Radical" operation, December 29th, 1925. Intravenous injections of colloidal lead commenced January 5th, 1926. Total quantity administered 0.6 gram Pb. No reaction.
Subsequent History.—Now alive and well three years later.
Comment.—Prognosis after operation alone most unfavourable.

240.—Female, aged 52; married; 2-para.
Diagnosis.—Spheroidal-celled carcinoma of right breast and axillary glands (sections +).
Treatment.—"Radical" operation, February 26th, 1926. Intravenous injections of colloidal lead commenced March 2nd, 1926.

Total quantity administered 0.685 gram Pb. Rather severe vomiting in earlier part of treatment.
Subsequent History.—Now alive and well nearly three years later.
Comment.—Prognosis after operation alone bad.

244.—Female, aged 72; unmarried.
Diagnosis.—Spheroidal-celled carcinoma of right breast and axillary glands (sections +).
Treatment.—"Radical" operation, March 15th, 1926. Intravenous injections of colloidal lead commenced March 26th, 1926. Total quantity administered 0.575 gram Pb. Some gastro-intestinal disturbance after the earlier injections, from which patient quickly recovered.
Subsequent History.—Now alive and well nearly three years later.
Comment.—Prognosis after operation alone grave.

297.—Female, aged 54; widow; 6-para.
Diagnosis.—Spheroidal-celled carcinoma of breast and axillary glands (sections +).
Treatment.—"Radical" operation, November 25th, 1926. Intravenous injections of colloidal lead and lead selenide commenced December 1st, 1926. Last dose of colloidal lead phosphate. Total quantity administered 0.555 gram Pb. No reaction.
Subsequent History.—Now alive and well over two years later.
Comment.—A very bad case. Prognosis after operation alone very bad.

The following cases, which may also be briefly recorded, are of some interest. In most the wide extent of the growth is well shown in photographs taken before treatment. They are all alive and well at the present time.

82.—Male, aged 51.
Diagnosis.—Squamous carcinoma of tongue, fauces, soft palate, glands of neck (sections +).
Treatment.—"Radical" operation, March 14th, 1923. Intravenous injections of partly colloidal lead iodide commenced March 22nd, 1923. Total quantity administered 0.56 gram Pb. No reaction. Mobilization later.
Subsequent History.—Now alive and well six years later.
Comment.—Extent, nature, and situation of disease made prognosis after operation alone extremely grave.

333.—Male, aged 68.
Diagnosis.—Squamous carcinoma of face (section +).
Treatment.—Excision with diathermy, June 26th, 1927. Intravenous injections of colloidal lead, lead selenide, and lead phosphate commenced July 3rd, 1927. Total quantity administered 0.55 gram Pb. No reaction.
Subsequent History.—Now alive and well more than one and a half years later. All spots are fast disappearing.
Comment.—Might have been cured by operation so far as the growth was concerned.

327.—Male, aged 64.
Diagnosis.—Basal-celled carcinoma of face (section +).
Treatment.—Diathermy excision May 18th, 1927. Intravenous injections of colloidal lead and lead phosphate commenced May 28th, 1927. Total quantity administered 0.33 gram Pb. No reaction.
Subsequent History.—The diathermy cautery was used on several subsequent occasions. Now alive and well, with much contracture of face, nearly two years later.
Comment.—Unlikely that operation alone would have proved successful.

R. I. 32.—Male, aged 62; medical practitioner.
Diagnosis.—Carcinoma of sigmoid (section +) with involvement of glands.
Treatment.—Excision of sigmoid and portion of adherent small bowel with some glands by Mr. Woolfenden, January 22nd, 1926. Temporary colostomy. Intravenous injections of colloidal lead commenced February 3rd, 1926. Total quantity administered 0.35 gram Pb. Never any serious reaction.
Subsequent History.—Now alive and well three years later; has gained weight; no evidence of disease.
Comment.—At the operation it was considered extremely unlikely that all the numerous glands were removed.

R. I. 17.—Female, aged 23; unmarried.
Diagnosis.—Carcinoma of vulva (section +).
Treatment.—"Radical" operation, January 21st, 1926. Intravenous injections of colloidal lead commenced February 3rd, 1926. Total quantity administered 0.525 gram Pb. Never any serious reaction.
Subsequent History.—Now alive and well three years later.
Comment.—The extreme youth of the patient in connexion with cancer of the vulva must be almost unique. Prognosis would, therefore, seem to have been bad subsequent to operation only.

R. I. 21.—Female, aged 64; married; 5-para.
Diagnosis.—Epithelioma of the thigh (section +).
Treatment.—Ulcerated growth excised by Mr. Jeans, February 12th, 1926; muscle involved. Intravenous injections of colloidal lead commenced March 16th, 1926. Total amount administered 0.3 gram Pb. No reaction.
Subsequent History.—Now alive and well three years later.
Comment.—This patient may have been cured by operation alone.

R. I. 29.—Female; aged 70; unmarried.
Diagnosis.—Carcinoma of body of uterus with fibromyomata (section +).
Treatment.—Operation April 22nd, 1926; panhysterectomy with removal of appendages. Intravenous injections of colloidal lead commenced May 25th, 1926. Total quantity administered 0.425 gram Pb. Very slight reaction.
Subsequent History. Now alive and well nearly three years later.
Comment.—This patient would in all probability have been cured by operation alone.

R. I. 100.—Male, aged 72.
Diagnosis.—Epithelioma of soft palate (section +).
Treatment.—Ulcer excised by Mr. Frank Jeans with diathermy August 19th, 1927. Intravenous injections of colloidal lead selenide commenced August 27th, 1927. Total amount administered 0.3 gram Pb. Some reaction after some injections, with oedema of ankles and cramps in legs.
Subsequent History.—Patient now alive and well one and a half years later.
Comment.—It is possible that this case was cured by operation, but the situation of the growth makes it unlikely that he was cured by such simple procedure.

R. I. 54.—Female, aged 59; married; 1-para.
Diagnosis.—Epithelioma of vulva (section +).
Treatment.—"Radical" excision of the whole of vulva including orifice of urethra, September 16th, 1926. Intravenous injections of colloidal lead commenced October 2nd, 1926. Total amount administered 0.45 gram Pb. Very slight reaction.
Subsequent History.—Now alive and well, no recurrence, nearly two and a half years later.
Comment.—The disease was so extensive that cure by operation was extremely unlikely.

N. H. 11.—Female, aged 39; married; 1-para.
Diagnosis.—Carcinoma of stomach (section +).
Treatment.—Operation by Mr. G. C. Simpson, September 26th, 1924. Growth hard, adherent to pancreas. Partial gastrectomy; gastro-enterostomy. Intravenous injections of colloidal lead commenced October 17th, 1924. Total quantity administered 0.46 gram Pb. No reaction.
Subsequent History.—Now alive and well nearly four and a half years later.
Comment.—This patient was not regarded as being curable or cured by operation alone.

N. H. 44.—Male, aged 50.
Diagnosis.—Sarcoma of cheek (section +).
Treatment.—Operation by Mr. Oldham, August 2nd, 1926 (see *Lancet*, 1928, i, 28). Intravenous injections of colloidal lead commenced October 25th, 1926. Total amount administered 0.55 gram Pb. Slight reaction.
Subsequent History.—Patient now alive and well over two years later.

N. H. 38.—Male, aged 40.
Diagnosis.—Carcinoma of colon (section +).
Treatment.—Operation by Mr. Rawlinson, May 29th, 1926. Large growth in the descending colon with abscess formation. Excision. Temporary colostomy. Later anastomosis. Intravenous injections of colloidal lead commenced June 8th, 1926. Total amount administered 0.225 gram Pb. No reaction.
Subsequent History.—Patient now alive and well two and a half years later. No sign of disease.
Comment.—It is unlikely that such an advanced case of cancer of the bowel would have been cured by operation alone.

N. H. 40.—Male, aged 61.
Diagnosis.—Carcinoma of colon (section +).
Treatment.—Operation by Mr. Monsarrat, August 3rd, 1926. Large growth in pelvic colon. No enlarged glands. Resection. Intravenous injections of colloidal lead commenced August 20th, 1926. Total amount administered 0.575 gram Pb. No reaction.
Subsequent History.—Now alive and well two and a half years later. No evidence of recurrence.

The next three cases, which are very briefly recorded, were all subjected to operation elsewhere, and were referred to us subsequently for treatment, in view of the fact that they were cases in which recurrence was expected owing to the extreme malignancy of neoplasms of these types. Histological examination was made in each case.

219.—Male, aged 47.
Diagnosis.—Melanoma of left eye (section +).
Treatment.—Operation, December 11th, 1925. Removal of eye by Sir William Lister. Intravenous injections of colloidal lead commenced January 18th, 1926. Total quantity administered 0.5 gram Pb. Slight reaction.
Subsequent History.—Patient is alive and well more than three years later.

223.—Male, aged 36.
Diagnosis.—Carcinoma of right testicle (section +).
Treatment.—Operation by Dr. Roughton, January 4th, 1926. Excision of testicle. Intravenous injections of colloidal lead commenced January 26th, 1926. Total quantity administered 0.625 gram Pb. Mobilization a year later. Slight reaction; nausea.
Subsequent History.—Now alive and well three years later.

337.—Male, aged 26.
Diagnosis.—Periosteal sarcoma of right tibia (section +).
Treatment.—Operation by Mr. Page, London, June 20th, 1927. Amputation through middle of thigh. Intravenous injections of

colloidal lead, colloidal lead selenide, and colloidal lead phosphate commenced September 2nd, 1927. Total quantity administered 0.543 gram Pb. Very slight reaction.

Subsequent History.—Now alive and well nearly one and a half years later.

(E) *Treatment of Primary Neoplasm with Lead and X Rays.*

Of the cases treated in this way the first two are of special interest in that regenesis of the growth occurred whenever treatment with lead was suspended, and in these circumstances the *x* rays appeared to be ineffective until further administration of lead was practised. This is not shown in the abbreviated notes below.

133.—Male, aged 8.

Diagnosis.—Sarcoma of the scapula (section +). Involvement of axillary glands.

Treatment.—Intravenous injections of colloidal lead commenced January 29th, 1924. *X*-ray treatment commenced April 29th, 1924. In July an *x*-ray picture showed considerable improvement in the scapula. Reossification. Improvement maintained in report dated January 23rd, 1925. Treatment suspended. April 27th, 1925, regenesis of tumour. Further treatment. Total quantity administered 0.2475 gram Pb. Slight reaction.

Subsequent History.—Death of patient reported June 26th, 1925.

Comment.—It now appears that the treatment of lead should not have been suspended when so small a quantity as 0.1725 gram had been administered. The age of the patient, and the size of the child, made it difficult to decide, in view of improvement.

114.—Male, aged 18.

Diagnosis.—Round-celled sarcoma of the scapula (section +).

Treatment.—Intravenous injections of colloidal lead commenced August 10th, 1923. Rapid increase in size of tumour in next three weeks. *X*-ray treatment commenced. On November 16th, 1923, marked clinical improvement; maintained till end of year. Treatment suspended. March 28th, 1924, recurrence below glenoid noted. Further treatment with lead and *x* rays. July 3rd, 1924, improvement with reossification. Treatment again suspended. August 5th, 1924, destructive bone changes again taking place. Further treatment till December 2nd, 1924. Total quantity of lead administered 0.415 gram. Slight reaction. November 20th, 1924, report: "This patient now undoubtedly doing well. Supraclavicular and axillary swellings disappeared; the size of the scapula is almost normal."

Subsequent History.—Patient disappeared. Was reported dead, of recurrence in the spine, September 18th, 1925.

R. I. 121.—Male, aged 14.

Diagnosis.—Periosteal sarcoma of femur (no section; *x*-ray and clinical evidence).

Treatment.—Intravenous and intra-arterial injections of colloidal lead phosphate commenced June 11th, 1928. Total amount administered up to last injection, October 25th, 1928, 0.412 gram Pb. No reaction. Three injections (0.16 gram Pb) were given directly into femoral artery. *X*-ray application four days after the last three injections.

Subsequent History.—The condition of the patient is good. The tumour has decreased in size, but it is too early to state ultimate fate. So long ago as June, 1928, Professor Kelly considered the case quite hopeless, and that the duration of life could not be many weeks.

R. I. 125.—Male, aged 33.

Diagnosis.—Fixed mass carcinoma of femoral glands (section +), secondary to carcinoma of foot.

Treatment.—Intravenous and intra-arterial (femoral) injections of colloidal lead and lead aspartate commenced August 29th, 1928. Total quantity at present administered 0.46 gram Pb. Slight reaction. *X* rays applied four days after each of the injections of lead.

Subsequent History. Too soon for prognosis. Tumour in groin smaller, soft, and movable.

Comment.—Of interest because of arterial route employed.

N. H. 2.—Male, aged 28.

Diagnosis.—Recurrence of carcinoma of testicle (section +). Mass in groin.

Treatment.—Excision of left testicle by Mr. G. C. Simpson two years previously, followed by *x*-ray applications. Recurrence. Intravenous injections of colloidal lead commenced August 12th, 1924. Total quantity administered 0.265 gram Pb. No reaction.

Subsequent History.—Now alive and well four and a half years later. No evidence of disease.

140.—Male, aged 34.

Diagnosis.—Mixed-cell sarcoma of the scapula and axillary glands (section +).

Treatment.—Intravenous injections of colloidal lead commenced March 7th, 1924. After seven doses *x*-ray treatment begun. Eighteen *x*-ray applications in all in conjunction with further intravenous injections of lead. Total quantity administered 0.2 gram Pb. No reaction.

Subsequent History.—Patient is alive and well five years later.

331.—Female, aged 72; unmarried.

Diagnosis.—Lymphosarcoma of left groin.

Treatment.—Tumour excised June 24th, 1927. Intravenous injections of colloidal lead selenide and colloidal lead commenced June 28th, 1927. Recurrence noted January, 1928. Patient not seen for four months. June 12th, 1928, recurrence adherent to the femoral artery and vein; removed with difficulty. Further course of lead phosphate injections administered together with *x*-ray therapy. Total quantity of lead administered approximately 0.6 gram, and five *x*-ray applications. No reaction to injections.

Subsequent History.—Patient has put on weight, and at the present time there is no evidence of recurrence.

R. I. 75.—Male, aged 52.

Diagnosis.—Lymphosarcoma of pharynx, roof of mouth, and cheek (section +).

Treatment.—Intravenous injections of colloidal lead commenced March 18th, 1927. Total amount administered approximately 0.6 gram Pb. No reaction. Last injection February 15th, 1928. Eight doses of *x* rays applied to right side of the face, and three doses applied to neck on the right side.

Subsequent History.—Now alive and well nearly two years later.

STATISTICS AND RESULTS.

In any assessment of the results of the treatment of human disease, and especially of malignant disease, we are confronted with so many variable factors—site of neoplasm, type of growth, stage of the disease, whether it be primary or secondary, the constitutional condition of the patient, the psychology and experience of the medical attendant, and the rest—that no statistical survey of grouped or general results which takes into consideration a less number than several millions of cases can be more than suggestive. So it is clear that when a practitioner, inexperienced in the method employed, fails in 25 or 50, or even 100 cases, to secure a single completely satisfactory result, as very easily may happen with a new method of treatment, it must be remembered that negative evidence of that sort can never be weighed in the balance against that which is positive.

It has seemed to us, then, that at the present time the clear enunciation of many positives in a variety of circumstances may set in motion philosophical reflection in minds trained to apprehend.

In the following table details of general interest are presented in a simple manner in order that no confusion may be created as to the results recorded, or objections raised on the score of incompleteness of information, as has happened without justification in the past,[8] in spite of the fact that we have on several occasions[1 2 3 4] published full statements of our methods and results, with illustrative cases.

Table of Results.

November 9th, 1920–November 9th, 1928.

1. Total number of cases treated	566*
2. Died of the disease before treatment could be completed	359
(*a*) Received less than 0.25 gram Pb ... 198	
(*b*) Received more than 0.25 gram Pb, but less than 0.5 gram ... ... 161 –	
3. Died of the disease after treatment concluded ...	77 –
4. Died of intercurrent affections, while under treatment	7
5. Died as result of extensive destruction of disease...	5
6. Complete treatment refused	22
7. Too recent for results to be estimated	31
8. Believed cured, but died of other affections (1 from apoplexy, 4½ years' interval; 1 from toxaemia of pregnancy, nearly 5½ years' interval)	2+
9. Disease completely arrested	12+
10. Believed cured and treatment stopped	51+

* At the conference in London in July, 1928, speaking from memory, I stated that about 1,000 patients had come under our care in Liverpool. This number is a little in excess of the exact figure. Many cases additional to those given above, however, and recorded in previous tables as "died before treatment could be commenced," and a further number rejected after consultation and examination, help to bring the total of cases seen nearer to the number stated.

In any estimate of results the serious type of case for the most part treated must be clearly remembered; it may be described as consisting largely of that in which the condition was considered hopeless. Ignoring, however, any consideration of temporary benefit—amelioration of symptoms and prolongation of life, or fatal destruction of the neoplasm—it appears that we have 303 cases to consider (items 2 (*b*), 3, 8, 9. and 10), cases which received more than one-half of the minimum treatment advised. Seventy-seven (77) died after full treatment; consequently it might be argued that there were 65 successes as opposed to 77 failures. Moreover, we have reason to believe that at least 40 per cent. of the "too-recent" cases will terminate favourably. Nevertheless, to put our statistics in the worst possible light, we can state that there were 65 successes out of 303 cases treated—that is, 21.5 per cent. of successful results.

CONCLUSION.

In conclusion we may urge two points, the recognition of which seems to us to be of paramount importance in the consideration of the treatment of malignant disease with lead at the present time.

First, no one in his senses would care to suggest that the possession of a knife and a few instruments is all that is required for the surgical cure of cancer of the stomach. Yet some seem to think that for lead therapy in this disease all that is required is that lead shall be pumped into the veins of the sufferer. We now realize that it was not the fault of radium that it was of so little clinical use twenty years ago.

Second, the scientifically minded inquirer will not demand that a new method of treatment for cancer operating on the worst and most advanced types of cases shall give far better initial statistical results than those obtainable with other long-established and standardized forms of treatment acting on early and selected cases; but, if it should do so, those capable of appraising evidential values will appreciate the vast possibilities that await full and proper development of the method tested.

I have to thank my colleagues Dr. Leslie Cunningham, Mr. J. B. Oldham, Dr. S. B. Herd, and Dr. M. Datnow, not only for the careful way in which they have conducted the laborious task of analysing the case records and tracing the fate of the patients, but also for co-operation in the clinical work, much of which has been conducted entirely on their own initiative and responsibility.

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CHOLECYSTOGRAPHY.

AN ANALYSIS OF 137 CASES SHOWING THE RELIABILITY OF THE ORAL METHOD.

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(*With Special Plate.*)

I HAVE been stimulated to write this paper by the repeated inquiries of my colleagues and other members of the profession as to how much one may expect from the x-ray examination of the gall-bladder, and with special reference to what is termed the "Graham-Cole test." Up to a few years ago the radiographic examination of the gall-bladder had been most unsatisfactory, and results were so uncertain that little reliance could be placed upon them. No routine examination of the gall-bladder was carried out in hospitals, and one was rarely asked to attempt such an investigation in private practice. To the late Drs. Carman of Rochester and Robert Knox of London, Case, George, and others in America and on the Continent, is due the credit for valuable pioneer work done in connexion with the radiography of the gall-bladder by direct methods. The detection of gall-stones could be made with more certainty in those large hospitals or clinics which were heavily endowed with funds than in the smaller and less favoured institutions. Where it was possible to take a large number of films under varying conditions of tube penetration, exposure, etc., the chances of obtaining positive evidence of pathological conditions involving the gall-bladder were proportionately greater. But even in the most favourable circumstances the direct method of examination yielded only 37 per cent. of correct diagnoses. The normal gall-bladder casts no shadow in even the most technically perfect films. It was maintained, therefore, that if a shadow of the gall-bladder was shown upon a film it was an indication of pathology; that the walls were abnormally thickened, the contents of unusual density, or that multiple calculi were present. This was probably true, and when positive shadows were obtained they were of definite diagnostic value. It was exceptional, however, to see such shadows in even the best films, and the absence of a shadow did not exclude disease, hence such a finding was of little value. The detection of gall-stones before the days of cholecystography depended upon the composition of the stones. If they contained sufficient calcium they produced well-defined shadows. Some were annular in form, depending upon the denser periphery of the stone, others cast a laminated shadow or concentric rings of dense and less dense material. Others, again, were more homogeneous and faceted. If the gall-bladder was filled with stones even of low density a faint, mottled shadow was sometimes shown. From time to time such radiographs were obtained, but were of rather rare occurrence, and were therefore looked upon more or less as curiosities.

In 1914 Cole called attention to the secondary manifestations of cholecystitis as revealed by the opaque meal, and these findings were further elaborated by George and others. Information so obtained, together with the direct visualization of stones, as already described, formed the basis for x-ray diagnosis of gall-bladder disease up to the year 1924. In February, 1924, Graham, Cole, and Copher[1] of St. Louis announced the success of their work in demonstrating the gall-bladder radiographically after the intravenous injection of tetrabromphenolphthalein. In a further communication[2] in 1925 these authors discuss the theory and application of this new method of examination:

> "This procedure is based upon the theory that if any substance containing a metal or atoms of bromine, or iodine, can be introduced into the gall-bladder in sufficient concentration, then that organ would be made opaque to *x* rays. The substance must be one which can be given either by the alimentary canal or by injection. It would have to be a substance which would be excreted by the liver and carried to the gall-bladder in the bile. Moreover, the ability of the gall-bladder to concentrate its contained bile would indicate that a sufficient time must elapse before a shadow of maximal density would occur. Reasoning from these premisses, the conclusion would have to be drawn that the shadows of sharpest contrast would be obtained in normal individuals. Similarly also no shadow would be expected to appear if the liver were unable to excrete the substance in sufficient amount, if the cystic duct were occluded, or if the function of the gall-bladder were sufficiently impaired to prevent the concentration of the material."

Such is the theory of cholecystography as briefly outlined by Graham, Cole, and Copher. As the object of this paper is to demonstrate by practical statistics the reliability of cholecystography by the oral method in particular, I do not wish to lengthen my communication unduly by recounting in detail the history of its development or the chemistry of the drugs used. No paper on this subject would, however, be complete without describing the Graham-Cole technique as first practised. In January, 1925, Graham used the tetraiodo-phenolphthalein sodium salt, and claimed superiority for this over the bromine salt in that it cast a denser shadow, a smaller dose was sufficient, and the toxicity was lessened in virtue of the reduced dose.

Technique of Intravenous Method.—In 30 c.cm. of freshly distilled water 3.5 grams of the salt are dissolved. The solution after filtration is sterilized in a boiling water bath for 15 minutes. It is given intravenously in two doses, half an hour apart, in the morning before breakfast, between 7.30 and 9 o'clock. Care should be taken not to allow extravasation outside the vein, as sloughing of tissue may occur. Certain orders are given to the patient and are essential:

1. Breakfast and lunch should be omitted.
2. Protein should be omitted from the evening meal.
3. Water is allowed *ad libitum*.
4. Stomach contents should be made alkaline by frequent doses of sodium bicarbonate.

The rationale of the latter procedure is explained in an article by Cole, who found experimentally on dogs that the flow of bile into the intestines through relaxation of the sphincter of Oddi is prevented by keeping the contents of the stomach alkaline. This probably tends to promote the concentration of bile in the gall-bladder. Films are taken at four, eight, twenty-four, and thirty-two hours after injection. A normal gall-bladder will begin to cast a shadow in four hours. This will be faint, but should reveal the

contour of the normally shaped organ. From sixteen to twenty-four hours the shadow becomes denser but the gall-bladder smaller in size. From that time onwards the shadow diminishes in density until the forty-eighth hour, when no dye should remain.

Interpretation.—If no shadow is obtained any of the following conditions may be present.

1. Serious disturbance of hepatic function resulting in insufficient secretion of the dye to cast a definite shadow. The gall-bladder may not be appreciably altered.
2. Obstructed ducts: (*a*) hepatic, (*b*) cystic, (*c*) common. In the case of the last the absence of shadow is said to be due to excessive diffusion of the dye in a large accumulation of bile.
3. A failure to concentrate bile as a result of inflammatory obliteration of the lymphatic vessels in the walls of the gall-bladder.
4. Multiple stones. If the gall-bladder is filled with stones the amount of dye which enters it may be insufficient to cast a shadow.

If the shadow is faint at the period when it should show a maximal density, or if the shadow is late in appearing, or persists for an abnormally long time, cholecystitis is said to be the cause. In my opinion, however, based upon my own experience, any of the conditions which have already been enumerated may be present, and I do not think it is possible to make a differential diagnosis. Stones which cannot be detected by ordinary radiography owing to their low density and extreme translucency may be by this method clearly demonstrated. I do not say that all can be visualized, but a proportion of them can be shown which would otherwise be missed.

The detection of stones depends upon: (1) their density in relation to the dye-stained bile; (2) the number of stones in the gall-bladder; (3) the situation of the stones—that is, whether in ducts or gall-bladder. If the stones are of very low density, and are not tightly packed, they will appear as discrete clear areas in the dye-filled gall-bladder. If in great numbers and the bladder is completely filled the entry of the dye will be prevented and no shadow will be seen. Stones showing as clear areas in the dye-filled gall-bladder are spoken of as "negative" shadows. If the stones possess calcium in their composition they may appear as discrete opacities in the gall-bladder, and are referred to as "positive" shadows. A proportion of stones will cast definite "ring" shadows with clear centres. If a stone is impacted in the cystic duct it may be visualized by the deposition of dye-stained bile upon it, while the absence of any gall-bladder shadow indicates the obstruction caused by the stone. Stones in hepatic and common ducts may be revealed in a similar way.

It is conceivable that a proportion of stones may be of such a density that they occupy an intermediate position between the extremely translucent and the moderately opaque. Such stones may be present in a dye-filled gall-bladder without casting either negative or positive shadows, and these will therefore be missed by any method of examination. It is probable that they are not of frequent occurrence, but they are bound to cause disappointment in some cases, even when the most careful technique has been observed.

The interpretation of cholecystographic findings just given is equally applicable to the intravenous and oral methods of examination. Using the intravenous method, Graham, Cole, and Copher, in a series of 80 patients upon whom operations had been performed, found the *x*-ray diagnosis to be correct in 96.25 per cent. of the cases. Although the results were so good, there were certain objections to this particular method. In some patients toxic reactions occurred, varying from nausea or slight dizziness to a condition of temporary collapse with a rapid fall in blood pressure. By using the tetraiodo-phenolphthalein instead of the bromine salt these unpleasant reactions have been almost eliminated. Nevertheless, the possibility of such reactions and the fact that the intravenous method required a certain amount of surgical skill, as well as the usual aseptic precautions, to some extent acted as a deterrent to the general use of cholecystography. In collaboration with my colleagues in Mercer's and Richmond Hospitals a small number of cases were examined by the intravenous method during the year 1925, but the results were not very satisfactory, and were not proved to be reliable by operation. I do not wish, however, on this account to condemn the method. First attempts are usually unsuccessful, and I have no doubt that our failures were due to faulty technique or defective drugs. In January, 1925, Whitaker and Milliken of Boston described their results in the oral administration of tetraiodo-phenolphthalein. This was followed from time to time by communications from other workers in America and elsewhere, testifying to the good results obtained by this method, and to-day it has become a routine procedure, and I think I am correct in saying that in this country, at all events, it has replaced the intravenous method.

It was some time before a satisfactory and stable drug could be produced. It acted as a severe gastric irritant, and for this reason it was necessary to enclose the drug in a pill, or capsule, which would pass through the stomach without dissolving. Chemists had many difficulties to overcome, but it is not my purpose to refer to them in this paper. Suffice it to say that many firms are now making keratin-coated capsules which are giving very satisfactory results. Each capsule contains 5 grains of the iodine salt, and the total quantity given varies from 35 to 50 grains, according to body weight. Even this method is not entirely free from unpleasant reactions, but at the worst these only take the form of nausea, with occasional vomiting and diarrhoea, and usually pass off in the course of a few hours. If this difficulty has not already been solved, I believe it will very soon be overcome by using a suspension of the tetraiodo-phenolphthalein in a finely divided condition, as described by Levyn and Aaron.[4] Upon the addition of fruit juice a freshly precipitated acid is formed which is easily converted into a soluble salt by the alkaline duodenal contents. It is claimed that this method causes none of the unpleasant reactions associated with the taking of capsules.

The precise technique adopted varies with different workers, but I have found the procedure recommended by Stewart and Ryan[3] to be very successful, and all my cases since January, 1926, have been examined according to this method.

Oral Technique.

An aperient should be given twenty-four hours before the ingestion of the capsules. On the morning following, a preliminary examination of the gall-bladder should be made. (This part of the Stewart technique I have usually omitted in order to save time, but when possible it is the ideal to be followed.) The usual lunch is allowed. At 6.30 p.m. the following meal is advised: thick soup, creamed chicken, bread-and-butter, and a glass of milk. The abundance of fat in this food will partially or completely empty the gall-bladder in from one to two hours. It is then in a receptive condition for the opaque bile. At 9.15 p.m. half a teaspoonful of sodium bicarbonate in half a glass of water is given. Commencing at 9.30 p.m., two kerasol capsules are given with half a glass of water every fifteen minutes until the complete number has been taken. The patients are instructed not to bite the capsules, but to swallow them whole. Two or three glasses of water may be taken gradually after the ingestion of the capsules. No aperient is allowed until the examination is completed, and no food is allowed until after the second radiographic examination has been made. The patients come for examination at 9.30 the following morning, and again at 1.30 or 2 p.m. Ordinary food is then allowed, and, if desired, another film may be taken an hour later. This I generally omit. A final observation is made at 9.30 the following morning—that is, thirty-six hours after ingestion of the capsules. Radiographs are taken with the patient lying prone on the Potter-Bucky diaphragm, and exposures should be short enough to allow the patient to hold the breath with ease. This is very essential, as the slightest respiratory movement may be sufficient to prevent the proper visualization of the gall-bladder, and if stones are present there will be little chance of demonstrating them. In normal cases the shadow should appear at the twelfth hour, should be smaller and slightly denser at the sixteenth hour, and should be gone in thirty-six hours, or only very faintly seen. The success of the method depends upon the most careful attention to details. For this reason I have printed instructions which are kept by the ward sisters in my hospitals. In my private practice, whenever possible, I like to interview the patients personally the day before examination, so that I can elicit their co-operation and explain the instructions. The points to stress are, "no food and no aperient until permission is given." Failure to observe these instructions has in several cases produced a "no shadow" result, which could not therefore be accepted as reliable, and necessitated a complete repetition of

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FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

DESCRIPTION OF FIGURES.

FIG. 1.—Showing the outline of the normal gall-bladder, filled with the dye, at the lateral margin of the psoas muscle, beneath the shadow of the twelfth rib.

FIG. 2.—Shadow of dye-filled gall-bladder mottled by clear areas, signifying the outlines of stones in the opaque bile.

FIG. 3.—No dye has reached the gall-bladder; the outline of a stone can be clearly seen below the shadow of the transverse process of the third lumbar vertebra; this stone was in the common duct. A shadow is also to be seen above the upper border of the twelfth rib; it was cast by a stone recovered from the hepatic duct.

FIG. 4.—Multiple stones in the gall-bladder.

FIG. 5.—Same case as Fig. 4. Serial radiograms show a filling defect in the duodenal bulb, caused by pressure of the dye-filled gall-bladder, whose shadow is seen in the left upper angle of each film.

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FIG. 1.—CHEST AT END OF NORMAL INSPIRATION. Breath held, but no effort made to force expiration.

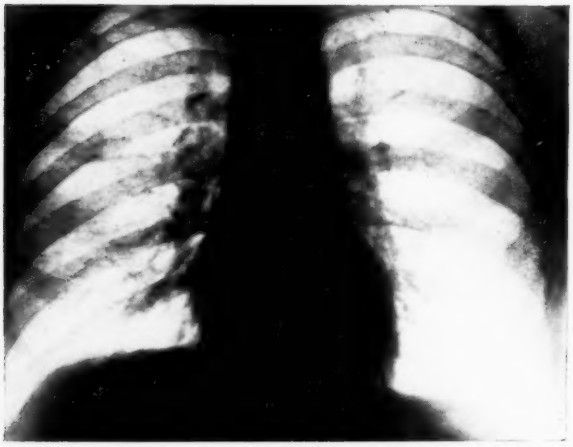

FIG. 2.—CHEST AT END OF NORMAL INSPIRATION (Valsalva's Experiment). Breath held, and extreme effort made to force expiration against obstruction. Pulse could not be detected at wrist, but, when screened, the heart was seen to be making slight movements. Positive intrapleural pressure=75 mm.

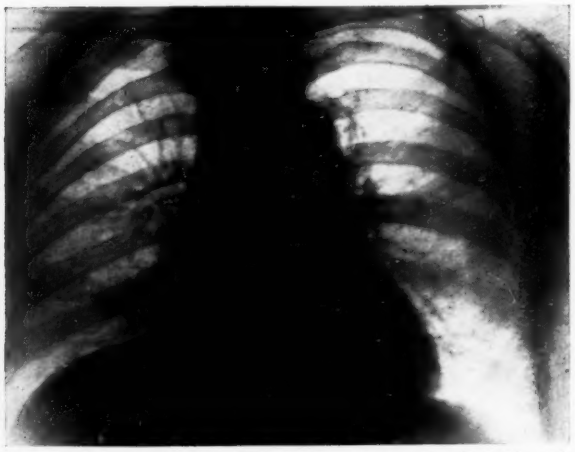

FIG. 3.—CHEST AT END OF NORMAL INSPIRATION. Breath held, and extreme effort made to inspire against obstruction.

FIG. 4.—CHEST AT END OF NORMAL EXPIRATION. Breath held, but no effort made to inspire.

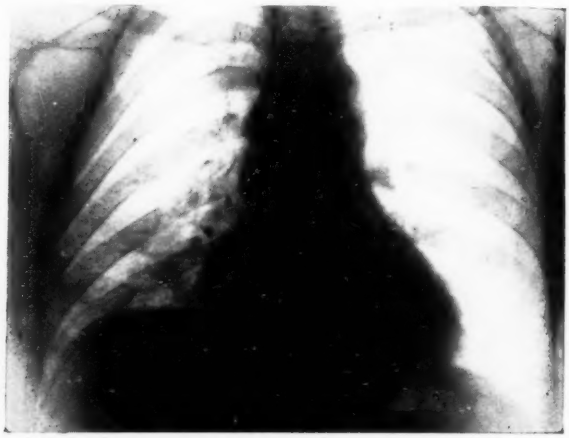

FIG. 5.—CHEST AT END OF NORMAL EXPIRATION. Breath held, and extreme effort made to force expiration against obstruction. Pulse could barely be detected at wrist.

FIG. 6.—CHEST AT END OF NORMAL EXPIRATION (Müller's Experiment). Breath held, and extreme effort made to inspire against obstruction. Pulse easily detected at wrist. Heart seen to be beating forcibly when screened. Negative intrapleural pressure=90 mm.

the whole procedure. Fallacious findings will usually be found to be due to faulty technique, or to failure on the part of the patient to follow the instructions. Fallacies due to defective drugs are now practically unknown, but to avoid such a possibility capsules should be bought only from reliable manufacturers. The patient may vomit immediately after taking the capsules; should this occur it is important to inquire whether any of the capsules have been ejected. If pyloric obstruction is present the capsules will dissolve in the stomach no matter how they are coated. The test is said to be contra-indicated in elderly people with low arterial tension and myocarditis, and also in subjects of extensive arterio-sclerosis. While these precautions may be necessary for the intravenous test, the danger of severe reaction from the oral method is practically *nil*.

The following tables have been prepared to show on a percentage basis the confirmation of the *x*-ray findings by operation, and also an analysis of the surgical findings. The cases to which they refer were examined between January, 1926, and October, 1928. There were 47 males and 90 females. The ages were as follows:

Under 20 years	3
20–30 years	13
30–40 years	36
40–50 years	30
50–60 years	40
60–70 years	12
70–80 years	3
Total	137

TABLE I.

Description	No.	Operated.	Correct.	Per Cent.
Normally visualized	48	12	9	75
Faint shadow	19	10	10	100
Late appearance	11	5	5	100
No shadow	40	25	24	96
Stones	19	12	12	100
Total	137	64	60	93
Total cases reported pathological with or without stones	89	52	51	98

TABLE II.—*Analysis of Surgical Findings in Cases Reported Pathological.*

Stones	39
Chronic cholecystitis	8
Adhesions between gall-bladder and colon	1
Adhesions between gall-bladder and duodenum	2
Cirrhosis of liver and chronic cholecystitis	1
Normal gall-bladder	1
Total	52

TABLE III.—*Faint Shadow—10 Cases. Surgical Findings.*

Multiple stones in gall-bladder	5
Stones impacted in cystic duct	1
Adhesions between gall-bladder and colon	1
Adhesions between gall-bladder and duodenum	1
Reported pathological	2
Total	10

TABLE IV.—*Late Appearance—5 Cases. Surgical Findings.*

Adhesion between gall-bladder and duodenum	1
Multiple stones in gall-bladder	3
Cirrhosis of liver, small adherent gall-bladder	1
Total	5

TABLE V.—*No Shadow—25 Cases. Surgical Findings.*

Single large stone in gall-bladder	1
Multiple stones in gall-bladder	13
Multiple stones in gall-bladder and ducts	2
Single stone in common bile duct	1
Chronic cholecystitis	7
Normal gall-bladder	1
Total	25

Of the twelve gall-bladders normally visualized (Table I) upon which operations were performed it will be noted that the *x*-ray findings were incorrect in three cases. One had a malignant liver, and presumably the disease was not so advanced as to prevent the secretion of the bile-stained dye and the filling of the gall-bladder. The gall-bladder itself was not directly involved. In the other two cases single stones were found in the gall-bladder. These were probably stones of intermediate density (to which type I have already referred), not translucent enough to cast a negative shadow and not sufficiently opaque to cast a positive shadow. Of the twenty-five "no shadow" cases which came to operation, in only one were the *x*-ray findings not verified. I cannot explain the cause of this failure. The patient was a hospital case, and may have taken food before the first radiograph. It is of interest also to note that in all those cases presenting faint shadows, or in which the shadow was late in appearing, which were submitted to operation, the *x*-ray findings were verified. This was contrary to what I had expected. In the past my reports upon these cases were made with very great caution, but the result of this study has considerably increased my confidence in the value of these signs. In all operated cases in which stones were visualized, stones were found, but in Table II it will be seen that of all cases reported pathological stones were found in 39, while in only 12 of these were stones demonstrated radiologically. That is to say, 69.3 per cent. of the stones did not cast definite shadows, either negative or positive, which could be recognized as stones.

Conclusions.

1. The oral method of carrying out the Graham-Cole test is reliable and is capable of giving a correct indication as to whether the gall-bladder is normal or pathological in 93 per cent. of cases.

2. Except in the case of visualized stones it is not possible by means of this test to give a precise diagnosis. Different surgical conditions will produce similar *x*-ray appearances, and therefore in the "no shadow, faint shadow, and late appearance cases" one is only justified in saying that the gall-bladder is pathological.

3. The success of the method depends upon the most careful attention to details in preparation and to correct radiographic technique.

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THE EFFECT OF OBSTRUCTED RESPIRATION ON HEART AND LUNGS:

ITS CLINICAL IMPORTANCE IN RADIOGRAPHY.

BY

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(*With Special Plate.*)

DURING normal systole the heart changes its shape, size, and position, and pumps an average charge of 75 c.cm. of blood from each of the ventricles into the aorta and pulmonary artery. The discharge of blood into the pulmonary artery disturbs the size, shape, and position of the pulmonary vascular tree, and the pulmonary arteries are straightened in systole and relatively curved in diastole. Since the pulse wave in the pulmonary arteries is estimated to travel at three to six metres a second, it reaches the periphery of the lung in an interval of time which is probably not greater than one-sixtieth of a second. This indicates that the ideal radiogram of the chest requires an exposure of about one-hundredth to one-sixtieth of a second, so as to eliminate the effect of the propagation of the pulse wave along the arteries. The possibility of obtaining radiograms from such a brief exposure is entirely outside the range of most hospital *x*-ray equipments. In the majority of cases, with the existing apparatus, an exposure of less than half a second cannot be employed with any measure of success.

Apart from the movements in the lung vessels due to each cardiac cycle, the slower rhythm of inspiration and expiration also leads to a change in size, shape, and position of the bronchial and vascular tree. In inspiration the trachea, bronchi, and bronchioles become lengthened and revert to their original length in expiration. The movements of the respiratory apparatus in the subject who is being screened can be voluntarily controlled to some extent, but the involuntary cardiac movements cannot be controlled except to a slight extent by the voluntary control of respiration or by the voluntary assumption of the extreme erect attitude of attention. It is essential that all routine radiograms of the chest should be taken under strictly defined standard conditions in a particular phase of inspiration or expiration, and, if possible, in a particular phase of the cardiac cycle. So far one of the most successful attempts in this direction has been made by MacPhedran and Weyl[1] of the Henry Phipps Institute, Philadelphia. They have applied a tambour to the area of carotid pulsation on the neck of the patient, and the excursions of the tambour are employed to deflect a beam of powerful light on to a photo-electric cell of the vacuum type. This in turn is connected by way of an amplifier to a relay which operates the switch of the *x*-ray tube. In this manner a radiogram can be taken not only in a given phase of respiration but also in a given phase of the cardiac cycle with an exposure of one-twentieth of a second, and a minimum lag of one-twenty-fifth of a second between cardiac systole and the actual commencement of the exposure.

Both in the routine teaching of the normal radiographic appearance of the chest to students of anatomy and physiology, and in observing the varied symptoms of patients who have been screened or radiographed in the erect attitude, it has been noted that the subject may exhibit symptoms of distress ranging from dizziness to fainting. It was evident that in certain cases the respiratory mechanism was influencing the circulation of the blood to an inordinate extent. On viewing two radiograms of the chest of a certain subject it was observed that there was considerable variation in the appearance of the root shadows, and it was thought that this might be due to some alteration in the amount of blood present in the heart and lungs at the moment the photographs were taken. It was therefore determined to vary the amount of blood reaching the heart and lungs by repeating the classical experiments of Valsalva (1740) and Johannes Müller (1838) and to take radiographic records of the chest under the varying conditions obtainable. In Valsalva's experiment, after a deep inspiration is taken, the glottis is immediately closed and a strenuous and prolonged expiratory effort is made, but without allowing the air to escape. Such pressure is exerted on the heart and intrathoracic vessels that the movements and flow of blood are almost entirely arrested. "Pronounced swelling of the veins, visible principally in those of the neck and face, evacuation of the vessels in the pulmonary system, and surcharge of the systemic circulation, cessation of cardiac sounds, and disappearance of the arterial pulse can all be witnessed" according to Luciani.[2] In Müller's experiment the glottis is closed at the end of expiration and an attempt is made forcibly to inspire. "The heart and all the intrathoracic vessels fill to such an extent that the arterial pulsations cease owing to the surcharge of the lesser, and comparative evacuation of the greater circulation" (Luciani). These experiments are not devoid of risk in old age and in patients suffering from cardiovascular disease.

Standard radiograms of the chest of a healthy male, aged 33, of hypersthenic build, were taken under the varied conditions of intrapleural pressure which are produced in the experiments of Valsalva and Müller. The pressure of the air in the lungs was recorded by means of a mercury manometer connected to a tube in the mouth of the subject, care being taken to keep the glottis open, the nose being clipped, during the reading of the pressure. The standard conditions for the radiograms were a tube distance of two metres to minimize distortion, Coolidge tube of universal type, and an exposure of half a second at 110 kilo-volts, the patient standing erect with the screen immediately in front of him. Such a series of radiograms demonstrates the effect of changes of pressure in the pleural cavity on the volume of blood reaching the heart, and the variations in the size of the cardiac shadow within the physiological limits of respiration.

Fig. 1 shows the chest at the end of normal inspiration. The pressure of the air in the lungs is in equilibrium with that of the atmosphere. Assuming that the pressure due to the elasticity of the lung substance is 15 mm., the intrapleural pressure is 745 mm., so that there is a virtual negative pressure in the pleural cavity of (760−745)=15 mm.

Fig. 2 shows the chest at the end of normal inspiration, when an extreme effort is made to force expiration against obstruction, as in Valsalva's classical experiment. The radial pulse could not be detected, though the heart could be seen beating feebly on the fluoroscopic screen. The pressure of the air in the lungs rises to 850 mm. Allowing 15 mm. for the elasticity of the lung substance, the intrapleural pressure is 835 mm., or a positive pressure of (835−760)=75 mm. This increase of the intrapleural pressure prevents the return of venous blood to the heart from the great veins of the neck and abdomen. The result is clearly indicated by the marked decrease in the size of the cardiac shadow and the extent of uncovering of the lung roots. On ceasing the effort at forced expiration the face of the subject was suffused with blood, and a sudden sensation of dizziness developed. It must be repeated that this experiment of Valsalva is not without its dangers in the unfit.

Fig. 3 shows the chest at the end of normal inspiration, when the subject attempts to inspire still further against obstruction. The pressure of air in the lungs is reduced to 680 mm. Allowing 15 mm. for the elasticity of the lung substance, the intrapleural pressure is 665 mm., or a negative pressure of (760−665)=95 mm. The flow of blood into the heart is suddenly increased, as shown by the size of the cardiac shadow, which is greater than that shown in Fig. 1, and still greater than that in Fig. 2. The increased density at the lung root in this experiment is marked, and may easily lead to errors in radiographic reports in relation to conditions at the hilum. The increased density of the shadow is due to marked engorgement of the pulmonary vessels.

In addition to three experiments with radiographic records (Figs. 1–3) at the end of inspiration, three corresponding experiments were performed at the end of expiration. Fig. 4 shows the chest at the end of normal expiration. The pressure of the air in the lungs is 760 mm. The pressure exerted on the contained air by virtue of the elasticity of the uninflated lung is approximately 5 mm., so that the pressure within the pleural cavity is 755 mm., or a negative pressure of (760−755)=5 mm. Fig. 5 shows the chest at the end of normal expiration when the subject forces expiration still further against obstruction, as in "bearing down" or "straining at stool." The radial pulse could barely be detected at the wrist. The pressure of the air in the lungs was 835 mm., the pressure within the pleural cavity, allowing 5 mm. for the elasticity of the lung substance, was 830 mm. This yields a positive pressure of (830−760)=70 mm. The diminution in the volume of blood reaching the heart, as evidenced by the reduced size of the cardiac shadow, is most marked. The decrease in the size of the cardiac shadow is not so marked as in Valsalva's experiment (Fig. 2). The differences between Figs. 4 and 5 are of the same kind, but not of the same degree, as those between Figs. 1 and 2.

Fig. 6 was taken at the end of normal expiration, the subject making an effort to inspire against obstruction, as in Müller's experiment. The pressure of the air in the lungs is 675 mm. The intrapleural pressure is 670 mm., or a negative pressure of (760−670)=90 mm. The size of the heart is distinctly greater than in Fig. 5, and in contrast to Fig. 2, with the minimal cardiac inflow, is most marked. The heart in Fig. 6 is receiving the maximal inflow of blood that can be brought about by voluntary change of intrapleural pressure. The clinical picture corresponds closely to that seen in the attempt at inspiration against obstruction after a series of expiratory coughs in whooping-cough or in some phases of the dyspnœa of asthma. The density of the shadow of the lung roots should be compared with that in Fig. 2, when the cardiac inflow was at the minimum. The subjective disturbance in this experiment of Müller is not so marked or so easily produced as that in Valsalva's experiment.

The Significance of the Dead Spaces of the Chest.

As in the neck, so in the chest, certain spaces of great pathological significance are never seen in the routine dissection of the formalin-fixed cadaver. The textbook diagrams of fascial planes in the neck and of lines of pleural reflection in the chest do not emphasize the existence of those "dead spaces" filled with loose areolar tissue

which permit considerable distension of certain viscera, such as the pharynx and oesophagus, and of extreme distension of the veins in any condition involving severe physical effort or pathological venous congestion. In the thorax it is important to realize the extent of the fascial spaces in the posterior mediastinum and in relation to the lung roots, for those "dead spaces" not only allow room for expansion of engorged veins, but also determine the direction of expansion and spread of enlarged lymphatic glands and mediastinal tumours. The root of the left lung is almost encircled by the relatively resistant arch of the aorta, with a marked condensation in the surrounding connective tissue, whereas the root of the right lung is almost encircled by the dilatable vena azygos major and superior vena cava. The enlargement of glands, whether of the carinate group at the bifurcation of the trachea, or of those in the hilum of the right or left lung, is therefore directed towards the right side of the thorax. It is this tendency for the glands to enlarge on the right side which accounts for the phenomenon of right-sided paravertebral dullness, which has been so rightly emphasized by Riviere.[3] Similarly the conduction of the whispered voice from the third to the fifth dorsal spine on the right side, as described by d'Espine, is another manifestation of the enlargement of the glands to the right. Opie has emphasized that the common calcium-bearing glandular lesions, distinguished by the deposition of calcium salts, are right-sided irrespective of the side in which the pulmonary and intrapulmonary glandular lesions occur. In fatal infantile disease the calcium-bearing mass of glands often extends as far as the right side of the bodies of the vertebrae. Opie[4] has also stressed that the commonest demonstrable site of calcification, either radiographically or at necropsy, is in that lymph node which sits to the right of the trachea just above the bifurcation and above the arch of the vena azygos major.

Furthermore, the mediastinal pleura of the right side, above the level of the lung root, covers over a dead space extending from the superior vena cava anteriorly to the trachea and oesophagus medially, the right vagus lying somewhat freely therein. Enlarged glands in this area are frequently seen, and it is the perifibrosis thereof which so frequently leads to a strange "bruit de diable" over the right apex and neck, and renders the clinical signs in this area equivocal. The lowest gland in this space, just above the arch of the vena azygos major, is the one which most frequently displays a lesion, as mentioned above.

In order to obtain an instructive radiogram of the chest by freeing the right and left lung root from the shadow of the heart and great veins, it is essential to take the radiogram in that phase of respiration which fills the lungs with air and at the same time empties the heart of blood to the maximal extent. This is best accomplished by pinching the nostrils of the patient at the end of inspiration, either digitally or by a clip, and asking him to expire forcibly (Fig. 2), as in Valsalva's experiment. If the condition of the patient is such that Valsalva's experiment is dangerous, then the radiogram should be taken at the end of expiration, with forced expiration against obstruction, as in "bearing down" (Fig. 5). The information thus gained adds greatly to the value of the radiogram, and saves the expense of two or more oblique radiograms. Although with routine work with a Coolidge tube it is difficult to determine the size of those glands at the hilum which are enlarged but uncalcified, it should be noted that the gas tube often gives information of the degree of enlargement of both the calcified and uncalcified glands. This is well seen during and after an attack of measles or whooping-cough.

The repetition of the classical experiments of Valsalva and Müller, with the visible aid afforded by the *x*-ray screen and photography, clearly demonstrates the wide variation in appearance of the thorax in the same individual, and shows the need for further standardization in routine radiography of the chest. A given individual under different phases of respiration may simulate "cor bovinum" or "cor pendulosum." A brief study of the six radiograms presented indicates the need for the reconsideration of many of the terms used by the radiologist. Such terms as "dilated heart," "peribronchial fibrosis," and "increased hilum shadows" may have to be abandoned.

With the growth of knowledge accurate diagnosis is coming to depend, even in greater measure than it has in the past, on considerations of exact anatomy and physiology applied with understanding to the concrete pathological problem presented by each individual patient.

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THE DEEP SUBMAXILLARY LYMPH GLANDS.

BY

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THE submaxillary lymph glands have for long been recognized as a chain of glands occupying the groove between the lower border of the mandible and the superficial surface of the submaxillary salivary gland. The number of glands is variably given, but three large ones are considered fairly constant. The biggest of these is usually in the centre of the chain, lying below the facial artery as it turns upwards on to the mandible. Other glands, placed one anteriorly and one posteriorly to this, complete the trio. There may be additional smaller glands in the chain, or one of the main three may be absent, particularly the posterior one. These glands lie beneath the superficial layer of deep cervical fascia, but outside the capsule of the submaxillary gland. Occasionally one finds mentioned deeper lymph glands beneath the salivary gland or inside its capsule, but no very exact account of observations on which such statements are based can readily be found.

It is well known that lymph glands are to be found actually embedded in the substance of the parotid gland. So intimate is the relationship between the two that, as Neisse demonstrated, salivary acini are to be found invading the interior of some of these intraparotid lymph glands. It does not yet seem to have been determined whether such interrelations exist between the submaxillary salivary and lymphatic glands, although Poirier and Cunéo make the positive statement that "contrary to what we have noticed in the case of the parotid, there do not appear to be any lymphatic glands included in the submaxillary salivary gland."

In 1903 von Brunn addressed himself to this problem. He specially wished to find out if metastases in the submaxillary salivary gland occurring in cases of labial or lingual carcinoma were to be explained by the presence of lymph glands inside the salivary gland. He gives, as surgeons will do, a black list of the standard anatomy textbooks of his time, which threw no light upon his problem. Even the voluminous Sappey failed him. Turning to more specialized works, mostly studies of the lymphatic drainage of the tongue, he found that although one or two investigators who had injected the lymphatics of this region did not find any deep submaxillary glands, others made passing mention of small glands inside the submaxillary gland capsule or even enveloped by the gland. But these last did not give satisfactory accounts of work on which their statements were based. Von Brunn, therefore, himself examined 61 submaxillary salivary glands, which he cut into sections 2 or 3 mm. thick. The sections were examined unstained, and his drawings at any rate are only naked-eye views. Of the glands, 15 were removed at operation from 9 cases of cancer of the lower lip or tongue. One or two of those contained carcinomatous nodules, but there were lymph glands in none. The remaining 46 submaxillary glands were taken from 23 subjects of all ages, dead of conditions other than disease of this region. In two only, from different individuals, were lymph glands found. In each case a single small gland was seen embedded in connective tissue prolonged into the submaxillary gland as

a thick, vertical septum from around the facial artery ascending in its groove on the posterior pole of the salivary gland. This position von Brunn characterized as clinically, though not anatomically, in the gland substance.

In 1907 Bartels, in a specially successful injection of the lymphatic vessels draining the tongue in a newborn child, noted a small lymph gland injected lying close to the submaxillary gland. He described it as lying under the capsule of the submaxillary gland, and designated it as a "parasubmaxillary" gland similar to those described by von Brunn. But he stated that it was separated from the salivary gland by the facial vein, which deeply furrowed the posterior end of the latter, and from his illustration it might quite well be regarded as a variant of a member of the superficial submaxillary chain which is sometimes found lying below the others on the anterior facial vein as it crosses the superficial aspect of the salivary gland. The little gland was connected by a lymphatic vessel with the middle gland of the main submaxillary chain, which had been injected from the lymphatics passing from the

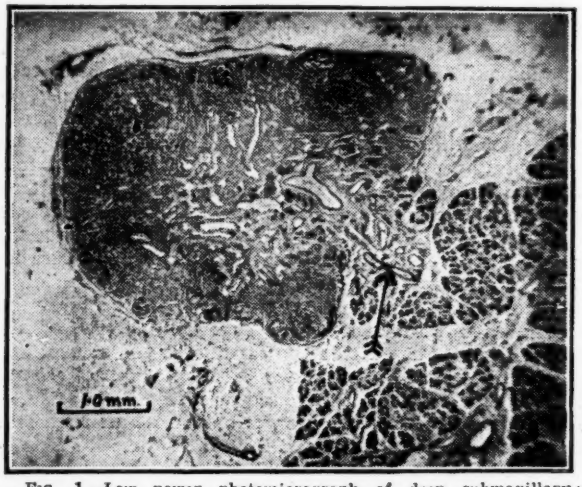

FIG. 1.—Low power photomicrograph of deep submaxillary lymph gland. Note salivary tissue (on the right) invading hilum. The arrow points to the union of the duct draining the invading acini with another from the adjacent salivary lobule.

tongue. Bartels did not trace any direct lymphatic from the tongue to this parasubmaxillary gland; as it was unconnected with any other gland it was presumably injected by retrograde flow from the main submaxillary lymph gland just mentioned.

In his volume on the lymphatic system in Bardeleben's textbook, Bartels classifies the deep glands such as those described by von Brunn and himself, as well as those more casually mentioned by others under the capsule of the submaxillary gland, as "paramandibular" glands, distinct from the "mandibular" glands. (In this work Bartels corrects the term "submaxillary" of the B.N.A. into "mandibular.")

If, as is probable, these intracapsular lymph glands have only a localized drainage from the salivary gland itself, one cannot be certain of revealing them by injection methods. It seemed that the only sure way to determine their presence and exact relation to the salivary gland would be to examine microscopically stained serial sections of the latter. This was therefore done with four submaxillary salivary glands taken from young children.

Two of these showed no trace of any lymph gland directly related to them. In another a lymph gland of typical structure was found closely applied to its posterior pole beneath the salivary gland capsule. It was directly applied to the subjacent salivary acini which at the hilum of the lymph gland mingled with the issuing lymphatic vessels. Beyond this on one side a thin process of the lymph gland was prolonged for some distance under the capsule over a salivary lobule. In the remaining submaxillary gland a lymph gland was found under the capsule presenting still closer relations to the salivary tissue (Fig. 1). Salivary acini were seen invading the hilum of the lymph gland and lying scattered throughout its medulla, abutting on the cortex in places (Fig. 2). The invading acini were drained by a duct which passed out of the lymph gland to join another draining the adjacent part of the submaxillary gland. This recalls the finding of Neisse in the parotid gland.

Thus there do exist, in some cases but not in all, deep submaxillary lymph glands inside the capsule of the submaxillary salivary gland, and directly related to the salivary acini. There seems to be no good reason for putting these deep glands, as Bartels has done, in a separate group from the more constantly found and more superficially placed submaxillary lymph glands. As in the case of the parotid salivary and lymph glands, all the lymph glands regionally associated with the submaxillary salivary gland may be classed together as submaxillary lymph glands. The main glands of this group, constantly present in varying numbers, are superficially situated under the deep fascia and external to the submaxillary gland capsule. Smaller and deeper members of the group are sometimes found embedded in the capsule (as those described by von Brunn) or inside the capsule in direct

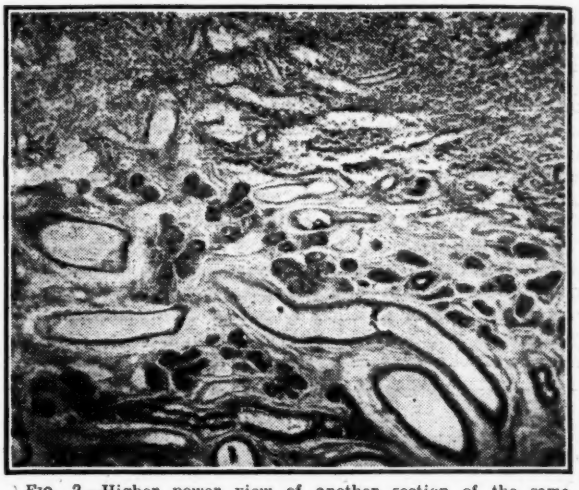

FIG. 2.—Higher power view of another section of the same lymph gland as in Fig. 1, showing adjoining cortical zone (above) and medullary zone (below). The medullary portion is studded with salivary acini; a salivary ductule is running horizontally close to the lower edge of figure.

relation to the salivary tissue (as those I have now described).

The practical importance of the occasional presence of these deep lymph glands is twofold. Surgically, one cannot be sure of removing all submaxillary lymph glands present without removing also the salivary gland, as is the usual practice. Pathologically, these deep glands may be responsible for some occurrences of cancerous metastases in the salivary gland, and may be the real seat of the rare cases of apparently primary tuberculosis in the submaxillary gland.

In examining the sections used in this investigation one was struck by the comparative absence of lymphoid tissue round the submaxillary ducts. Where present at all this was confined to very small collections of lymphocytes around the smaller, but not the smallest, ducts. Rawitz has described masses of lymphoid tissue visible to the naked eye in stained sections of submaxillary gland in *Cercopithecus sabeus*. These masses surrounded the smaller ducts and were devoid of all structural appearances resembling those of organized lymph glands. Rawitz claimed to have excluded the possibility of these masses being of inflammatory nature. No such appearances were seen in the human glands here studied.

My acknowledgements are due to Professor Evatt, of the Royal College of Surgeons, Dublin, who kindly supplied the submaxillary glands examined, and to my laboratory assistant Mr. Weston, who undertook the laborious preparation of the sections.

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SPONTANEOUS AND ARTIFICIAL PNEUMOTHORAX.*

BY

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PNEUMOTHORAX, or the presence of air in the pleural cavity, is, I think, a subject worthy of our consideration for two reasons: in the first place, because the occurrence of spontaneous pneumothorax, though perhaps rare, is one of our medical urgencies, and therefore cannot be considered unimportant; and in the second place, because the induction of artificial pneumothorax has now become an established method of treatment in certain cases of pulmonary tuberculosis. In fact, Sir James Kingston Fowler has said that "the induction of artificial pneumothorax is the only advance in the treatment of pulmonary tuberculosis since the introduction of sanatorium treatment as carried out at Nordrach."

Source of the Air.

Normally the pleural cavity, save for a little lubricating fluid, is a vacuum. Air may reach it:

(*a*) From the atmosphere, the result of a penetrating wound of the chest wall which perforates the parietal pleura. Apart from pneumothorax artificially induced, such instances are but seldom met with, though I have known it to be caused in a man by a deliberate stab in his side with a hat-pin during an altercation with his wife.

(*b*) From the lungs, the result of the rupturing of a tuberculous focus, usually a cavity, or the bursting of an emphysematous bulla, or laceration of the lung by an adhesion under strain.

(*c*) From a hollow viscus, the result of a foreign body ulcerating through the wall of the oesophagus, or occasionally by a peptic ulcer perforating the diaphragm.

Of these, the lung is pre-eminently the source of air in spontaneous pneumothorax, and the preponderating cause is the rupture of a tuberculous focus, usually a tuberculous cavity. Should such a cavity be small and its contents not highly infected with pyogenic organisms, then hydro-pneumothorax will result, whereas the rupture of a large cavity containing a quantity of highly infected material will give rise to pyo-pneumothorax, which is of the two the much more common complication. Simple pneumothorax, unaccompanied by fluid, may be due to laceration of lung by a pleural adhesion of tuberculous origin, or, as suggested by Parkes Weber,[1] to the rupture of a "cicatricial" bulla, the result of a previous minute tuberculous focus and adherent to the parietal pleura, the adhesion keeping the rupture open for a time. In some of these latter cases, however, hydro-pneumothorax may result owing to the cicatricial bulla containing a caseous remnant.

RECURRENT PNEUMOTHORAX.

In rare instances it happens that this accident occurs several times at varying intervals in the same patient. A case has been reported in which as many as eleven attacks have occurred. Personally I have seen but one case in which recurrent spontaneous pneumothorax has occurred, and that was the case of a man, aged 30, who gave a history of three attacks. The first was in December, 1922, and affected the left side. The other two attacks were both right-sided, and occurred in June, 1923, and March, 1928, respectively. The man was of athletic build, and examination of his chest when I saw him on May 18th, 1928, revealed no evidence either clinical or radiological of pulmonary disease. Moreover, he stated that each winter between the two last attacks he had played Rugby football regularly.

With few exceptions spontaneous pneumothorax makes its appearance in these cases like a "bolt from the blue" in a patient in whom no pulmonary disease was suspected, and in whom no pulmonary disease, even after the attack, can be detected by any known method. On the whole, the prognosis in these cases is good, whereas the incidence of pneumothorax in cases of known pulmonary tuberculosis is of extreme gravity. It seems probable that the explanation offered for recurring spontaneous pneumothorax is also the explanation of many cases of spontaneous pneumothorax attributed to the rupture of an emphysematous bulla, for it would appear that a bulla such as is seen on the margin of a lung in emphysema would, on rupturing, collapse, and prevent the escape of air in a quantity sufficient to produce an appreciable pneumothorax. Furthermore, emphysema is so common that were it a potent etiological factor pneumothorax might be expected to be met with more frequently. That adhesions could play a part in maintaining the patency of the aperture is unlikely, for adhesions in emphysema are conspicuous by their absence. It may be that pneumothorax arises only in those cases of emphysema where the ruptured bulla is in free communication with a bronchus large enough, and in consequence rigid enough, to resist collapse.

Pneumothorax has been classified into open, closed, and valvular, according as the aperture in the lung remains open, or is so small that it closes almost immediately, or is valvular, which no doubt explains the majority of cases. In these cases air enters the pleural cavity during inspiration, and, owing to the opening being valvular, cannot escape during expiration; thus the imprisoned air gradually accumulates until it exerts a pressure within the pleural cavity sufficient to close the valvular opening even during inspiration. If this state continues long enough the valvular opening will heal, and the air will ultimately be absorbed. Should, however, absorption of air take place before the valvular opening has healed it will burst open and allow more air to escape into the pleural cavity. This, according to Fishberg,[2] is the explanation of the return of dyspnoea in some cases of pneumothorax after paracentesis.

Symptoms.

The onset of pneumothorax in the majority of instances is abrupt. The patient is suddenly seized with intense pain in the affected side, has urgent dyspnoea, and all the symptoms of collapse. In some cases, however, the onset is anything but acute; in fact, the presence of pneumothorax may be unsuspected until discovered in the course of routine examination. The acuteness of the symptoms at the onset depends upon the functioning ability of the affected lung immediately preceding the escape of air into the pleural cavity. If the tuberculous infection is limited in extent so that the lung is for the most part functioning when the rupture occurs, then at the moment of rupture the symptoms will be intense, because a functioning lung has suddenly been put out of action; but if, as is sometimes the case, the whole lung is extensively involved with tuberculous infection so that prior to the rupture it has little or no function, then at the time of the rupture the symptoms will hardly be perceptible.

Physical Signs.

The affected side, which is immobile, is enlarged and the intercostal spaces may bulge, as opposed to what occurs in simple pleural effusion, when, as pointed out by Hale-White,[3] the affected side is often seen to be actually smaller than the sound side. The percussion note is hyperresonant, or even tympanitic, and the breath sounds over it are diminished in intensity. A cough, or even spoken words as heard over the affected side of the chest, and even rales should they be present, assume a peculiar metallic quality. It is in this condition also that the so-called "coin sound" is typically heard. One coin is placed flat on the upper part of the chest wall in front on the affected side, and an assistant taps it with another coin while auscultation is performed behind, with the stethoscope on the back at a point opposite the coin. With each tap of the coins a bell-like tinkle is heard through the stethoscope. If, in addition to air, there be fluid in the pleural cavity, then that fluid is found to shift with altered positions of the patient, so that an area which emits a dull note on percussion with the patient sitting up may become resonant on his lying flat. Moreover, with the patient in the erect posture, as is well demonstrated in radiograms, the upper limit of the fluid is a horizontal line, whereas in uncomplicated pleural effusion the upper limit of the fluid is represented by a curved line with its convexity upwards and its

* An address delivered before the North Lancashire and South Westmorland Branch of the British Medical Association on December 5th, 1928.

highest point in the axillary line. Again, when both air and fluid are present in the pleural cavity, a splashing sound will be produced on shaking the patient. The displacement of the heart in pneumothorax is frequently very great, for the entry of air into the pleural cavity destroys the cohesive property of the pleura by separating their two opposing surfaces so that the lung collapses, thus leaving unopposed the normal negative pressure set up by the other lung, and in consequence the heart is pulled over towards the sound side.

Treatment.

The acute symptoms at the onset should be relieved by a hypodermic injection of morphine and the application of a hot fomentation to the side. In many cases this is sufficient, and in three or four weeks the air will have been absorbed. In other cases, however, it may be necessary to tap the air in the pleural cavity, and this may have to be repeated three or four times in the first twenty-four hours. In such cases Fishberg recommends the injection of a quantity of air into the pleural cavity, on the assumption that the rise of pressure so caused will be sufficient to keep the perforation in the lung closed long enough to enable it to heal. In hydropneumothorax the same conservative plan is adopted as in the treatment of a simple pleural effusion. No mechanical intervention is undertaken for some three weeks, unless rendered necessary at an earlier date by the appearance of the signs of positive intrathoracic pressure. At the end of this time, if there are no indications of absorption, air is removed, and only after this has proved inadequate is fluid withdrawn. In pyo-pneumothorax the pus is withdrawn as soon as diagnosed, preferably by repeated aspirations in tuberculous cases.

ARTIFICIAL PNEUMOTHORAX.

The treatment of pulmonary diseases by the induction of artificial pneumothorax was first suggested by Carson, a Liverpool physiologist, about 1822, but it is only in recent times that the method has been employed on an extensive scale. It is now recognized as a valuable therapeutic measure in properly selected cases of pulmonary tuberculosis, in severe cases of haemoptysis, and to replace a pleural effusion or "tuberculous empyema." Less frequently it is employed in the treatment of bronchiectasis and pulmonary abscess.

In regard to pulmonary tuberculosis, all are agreed that the most suitable type of case for pneumothorax therapy is the one in which the lesion is unilateral and unaccompanied by firm adhesions, but opinions differ in regard to the most suitable stage in the course of the disease in which to employ the treatment. Some authorities advocate pneumothorax therapy in the early stages of unilateral lesions, on the grounds that the chances of the disease becoming bilateral are thereby diminished, that there is less likelihood of meeting with firm adhesions, and that the more local the disease the more chance is there of the lung refunctioning after compression. Others, however, prefer to wait until residence in a sanatorium has been given a trial before resorting to artificial pneumothorax. Personally, I adopt the latter course, and only consider the induction of artificial pneumothorax if, at the end of six months' residence at a sanatorium, there is no improvement in the patient's condition. The effect of sanatorium treatment in these early cases is, in my experience, so beneficial that the number of cases that will require the induction of pneumothorax is very small. The value of pneumothorax therapy lies more in the fact that it may prove beneficial in those cases which do not respond to ordinary sanatorium treatment, rather than in its being applicable to great numbers.

It is sometimes employed with success in cases in which both lungs are involved, provided that the second lung is but slightly affected, but such a procedure is not without risk, for it may, and does sometimes, lead to rapid extension of the disease in the uncollapsed lung.

Method of Induction.

To the method of induction of artificial pneumothorax I do not propose to refer, for the technique can only be learnt from an actual demonstration. An initial 300 c.cm. of air is introduced, not with the object of causing collapse of the lung, but of producing a cavity of reasonable size which can be enlarged by subsequent refills. The first refill is usually given the next day, and the second about two days after the first. Afterwards the refills may be repeated at intervals of three days, then at four or five, the intrapleural pressure being gradually raised each time until at the end of two or three weeks efficient collapse has, as a rule, been obtained. In these refills the amount of air given varies between 600 and 900 c.cm. If more than this is required it is safer to give the refills at more frequent intervals than to put in a larger quantity at one time. It then remains to space and adjust the refills so as to prevent the lung from expanding again. This can only be determined by a careful watch on the temperature chart, the patient's weight, and the signs, symptoms, and *x*-ray appearances in each case. Frequent *x*-ray examination is the best way of ascertaining the amount of collapse. In cases of haemoptysis, where rapid compression of the lung is desired, a larger quantity of air than is usual in the ordinary case of pulmonary tuberculosis may be given.

Once the lung has collapsed efficiently it is inadvisable to allow it to expand under two years, and even at the end of that time, if on expansion there is a return of symptoms of active pulmonary tuberculosis, further refills must be given. After such efficient collapse monthly refills are usually sufficient to maintain it.

The presence of laryngeal tuberculosis is no bar to the employment of artificial pneumothorax, but its induction is contraindicated when there is extensive and active disease in both lungs, or when there is extensive tuberculous disease elsewhere; also in cases complicated with heart disease, diabetes, asthma, bronchitis, and emphysema, and in old people and persons of a highly nervous temperament.

The main principle underlying the therapeutic value of artificial pneumothorax is rest. Rest is essential to the healing of any wound, and collapse of the lung affords such rest by annulling the respiratory excursions. Moreover, by relieving the state of tension in which lung tissue normally exists, it promotes healing by allowing cavities to collapse, with consequent apposition of their walls and ejection of their toxic and infective contents. Again, collapse of the lung induces a venous and lymphatic stasis in the lung, and thus promotes the formation of fibrous tissue. The effect of such stasis is also to retard the absorption of toxic products into the general blood stream and to impede the escape of tubercle bacilli into the lymph stream, thus tending to localize the lesion.

Furthermore, it is suggested by Goebel[4] that the tubercle bacillus, being an aerobic micro-organism, requires a plentiful supply of oxygen, and therefore does not thrive so well in a lung which is collapsed owing to obliteration of the pulmonary capillaries.

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THE MENTAL ASPECT OF EPIDEMIC ENCEPHALITIS.*

BY

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OCCURRENCE.

MENTAL symptoms were found to have occurred in a high proportion of cases. Thus, of 113 patients, mental symptoms were noted in 92, at either acute or chronic stage. In view of the variation of symptoms and their relation to the age of the patient the cases were analysed with special reference to the age factor. For this purpose the patients were divided into two groups: (1) children and adolescents up to the age of 18 years inclusive, and (2) patients aged 19 years and above. One patient from each group failed to survive to the chronic stage.

* Being the abstract of a paper which was read before the Liverpool Medical Institution on December 13th, 1928.

Children and young people showed a rather greater liability to mental affection than did the patients of adult years. Of the 113 patients, 47 were of Group 1; 42 of these (that is, 89.4 per cent.) showed mental symptoms, and of the 5 patients not so affected none were under the age of 15 years. On the other hand, from the 66 adult cases mental affection was noted in 44 (that is, 66.6 per cent.). In Group 1, therefore, mental symptoms occurred with greater frequency than in Group 2, and were the rule in all cases under the age of 15 years.

Mental Symptoms in Epidemic Encephalitis: Occurrence of Symptoms According to Age Groups.

Type of Case or Symptom.	Group I, Children and Adolescents (aged 1–18 inc.).	Group II, Adults (aged 19 and over).
ACUTE STAGE:		
Total cases of epidemic encephalitis ...	47	66
Cases showing mental symptoms ...	42 (89.4%)	44 (66.6%)
Acute delirium	27 (77.8% became chronic)	29 (34.4% became chronic)
Sleep disturbance	25	24
Emotional or conduct change	9	4
Psychotic symptoms...	3	5
Catalepsy stupor, etc.	13	13
CHRONIC STAGE:		
Conduct change	21	11
Moral change	12 – 55	0 – 24
Emotional instability	22	13
Psychotic symptoms...	5	13
Phobias and psychoneurotic symptoms	4	3
Bradyphrenia	11	13
Nocturnal excitement	12	6

DEGREE OF PERMANENCE.

There appeared, too, to be a greater tendency towards the more permanent type of mental affection among children and adolescents than among adults. Out of 92 cases showing mental symptoms at some stage, a history of acute delirium was given in 56—27 in Group 1, 29 in Group 2. In 21 cases out of 27 (that is, 77.8 per cent.) in Group 1 mental symptoms were noted in the sequel, while of the 29 adult patients only 10 showed a mental sequel (that is, 34.4 per cent.). The degree of mental affection at onset appeared to bear no relation to the symptomatology of the sequel.

PROGNOSIS.

With regard to the general question of prognosis in the case of mental disorder occurring during epidemic encephalitis, it has already been indicated that there is a greater tendency to the more permanent type of mental affection among children and adolescents than among adults. Of the 61 cases in which mental symptoms occurred during the chronic stage, or sequel of the disease, 23 showed gross mental change such as should warrant special care, whether the symptoms consisted of change of conduct, moral change, or states akin to the manic-depressive psychosis or chronic delusional insanity. Of these 23 cases, 16 belonged to Group 1, and while under observation none of the 16 recovered a normal state of mind. On the other hand, from the 7 cases belonging to Group 2, which were observed over the same period of time, several of whom were certified, 5 showed a complete return to sanity. It would seem, therefore, that the prognosis with regard to mental affection, other than delirium at onset, which occurs during childhood or adolescence, is extremely bad. On the other hand, in adults, even when the symptoms are of gross mental disorder, and might indicate a bad prognosis where the case is one of pure psychosis, the prognosis is relatively good, since in patients in whom the encephalitic mental state resembles psychotic disorder of an extremely chronic type complete recovery frequently occurs.

THE AGE FACTOR IN SYMPTOMATOLOGY.

The dependence of mental symptomatology on the age of the patient, so often recorded in the past, was well illustrated in the present series. The case records were analysed to determine the incidence of the following groups of symptoms: in the acute stage from delirium, neurosis, emotional instability, change in conduct, moral change, disorder of sleep, nocturnal excitement, psychotic symptoms, and ovidence of katatonia, catalepsy, or stupor; and in the chronic stage for bradyphrenia and euphoria in addition to the above.

During the acute stage the symptomatology of the two age groups was very similar, with the exception that patients who exhibited marked emotional instability and change of conduct as the chief feature of their acute attack were more common in Group 1, comprising children and young adults.

In the sequel the differences between the two groups were very much more marked. The mental symptomatology of Group 1 was characterized by change in conduct, moral change, emotional change, and nocturnal excitement. In adults, on the other hand, not only was the tendency to mental affection generally less, but among those cases affected psychosis occurred with greater frequency.

MORAL DISORDER.

In classification of the symptoms, definite distinction has been drawn between disorder of conduct and moral disorder, since the former may exist in marked degree, without any element of the latter, and also a certain amount of conduct disorder may depend on physical involvement, an aspect to which further reference will be made. Of the whole series, 12 patients exhibited moral change, but none of these came from Group 2. Among the symptoms met with in such cases were observed the following: uncontrolled use of bad language, gross cruelty, pugnacity and violence, thieving, lying, mythomania, in which the patient seemed unable to refrain from telling the most obvious untruths or from ridiculous exaggeration, truancy from school, running away, begging, marked and precocious erotism, masturbation, indecent exposure, incest, sodomy, or indecent assault. No somatic sexual precocity, such as that noted by Wimmer,[1] was observed, however. Among young males there was naturally a greater tendency to the more violent type of disorder, such as criminal or indecent assault.

DISORDER OF CONDUCT.

Change in conduct, too, proved much more common among children and adolescents than among adults, two-thirds of the 33 cases exhibiting such changes falling into Group 1. Every degree in change of conduct was noted, from the acquisition of some particular habit to conditions in which almost an entire change of personality was involved. Grimaces, noises, nail-biting, carelessness as to, or perversion of, daily habits, singing, jumping, mercyism, and spitting occurred.

Patients suffering from disorder of morals and conduct often showed themselves quite amenable temporarily, as if enabled for the moment to exercise voluntary control—when, for a short time, indeed, many of them would exhibit acute consciousness of their shortcomings; but as soon as outside influence was withdrawn their symptoms would return. Voluntary attention was frequently diminished, but instinctive attention was markedly increased, the patient showing an abnormal degree of curiosity. Though the intelligence quotient, as measured by Stoddart's modification of the Binet-Simon tests, was found to be very much below normal in several cases, it was difficult to determine whether any actual impairment of intelligence was present, since the poor response to a test might be accounted for by the derangement of attention just described, or by bradykinesia and bradyphrenia of the patient—the first preventing adequate continuity of concentration, the second group of factors causing rapid fatigue and disinclination for mental effort generally. Any defect of intelligence so recorded, therefore, would appear to be rather of a functional character, than to be due to any organic brain involvement.

PSYCHOTIC SYMPTOMS.

A resemblance was noted between patients suffering from epidemic encephalitis and those afflicted with such psychoses as manic-depressive insanity and dementia

praecox. There were found to be distinct points of difference, however, between the mental disorders of epidemic encephalitis and the psychoses which they resemble. The delusional state of epidemic encephalitis is more transient and variable than that of chronic delusional insanity. The mental outlook is objective and the immobility bradykinetic in those cases which resemble melancholia, but which differ from it for those reasons. The apparent katatonia of epidemic encephalitis is rather bradykinetic and bradyphrenic than part of the introversion of dementia praecox.

Psychoneurotic Symptoms.

Cases closely resembling definite types of psychoneurosis were not of common occurrence, and apparently bore no relation to the age of the patient. Well-marked psychasthenic symptoms, however, occurred in a few cases. At first sight the similarity between the mental symptoms of epidemic encephalitis and those of the psychoneuroses appears a strong one. On thorough investigation, however, it is found that there are two important differences. In the first place, the former may clear up and disappear quickly without the application of any treatment, while the latter, in the absence of psychological treatment, tend to pursue a chronic course or to improve very gradually. Secondly, the effects of psychotherapy on post-encephalitis tend, with certain exceptions, to be of a transient character, while in the psychoneuroses permanent recovery may be looked for. In other words, by psychological treatment in epidemic encephalitis we are only dealing with what has been vaguely described as the "large functional element" which is present in many organic nervous diseases, whereas in hysteria and the psychoneuroses we are concerned with conditions which, if not of psychogenic origin, are at any rate much more dependent upon psychic factors.

Among those who support the psychogenic theory of the causation of this condition considerable claims have been made for the value of psychological treatment. Apart from extravagant claims, however, psychotherapy has proved of definite value as a symptomatic form of treatment in a number of cases—this especially in the cases where insomnia or sleep inversion occurred. The method of treatment was mainly that of suggestion, and the effect was quickly obtained. The various "stunt" methods of suggestion which have been described, such as the injection of innocuous substances, do not appear to be of value since they have no sound rationale and can only be transient in effect. In intelligent patients, where a large so-called functional element is superimposed on the organic trouble, psychotherapy may be of considerable and lasting benefit.

Reference.

[1] Wimmer, A.: *Chronic Epidemic Encephalitis*, Heinemann, London, 1924, 14, 83, 84.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A CENTIPEDE IN THE NOSE.

A STONEMASON'S labourer, aged 28, recently presented himself to me with the following history.

For two or three years he had suffered from difficulty in nasal breathing, deafness, slight vertigo, and headache. For the past few weeks, however, one nostril seemed to be definitely obstructed, and tightness and irritation in his nose caused insomnia and sneezing. Involuntary nasal whistling occurred from which he sought relief by breathing through the mouth. One morning, when he was trying to clear his nose, a large and very active centipede was ejected through one of the nares. With some difficulty he captured the centipede alive and brought it to me in a box. Since that morning his nose has felt altogether more comfortable; the difficulty in nasal breathing and the local irritation have practically ceased. Examination of the nares showed enlarged turbinals and a deflected septum, but there was no ozoena and no sign of gross trauma. The patient does no gardening and has no recollection of smelling flowers at any time in the past two months. On the other hand, his story that the insect came from the nose and nowhere else was very clear.

Cases of nasal infection by insects, though rare, do occur in this country. Greenbottle and bluebottle flies (blow-flies), even in Great Britain, occasionally deposit their ova in the human nose or ear, extensive ulceration and actual necrosis of the soft parts and even of bone being produced as these ova mature. Such ova have even been found in the anterior chamber of the eye, having reached there probably by way of the nasal sinuses. How easily blow-fly infection may occur must be known to many who were on active service in the tropics and saw cases of wounded being taken up with masses of flies adhering to their eyes, mouth, and nose. Blow-flies will lay their eggs on any open sore, and in Gallipoli and other war zones the sufferings of the wounded were often aggravated by this cause. Wounds or

ulcers infected by larvae must be dealt with promptly and thoroughly. They should be irrigated with a 1 in 20 carbolic solution or swabbed with pure benzine. Tumours resulting from the pressure of larvae should be freely opened and the contents expressed. Iodine seems to be inadequate; I have poured iodine upon a mass of writhing maggots without producing any apparent effect upon their vitality. Gad-flies or bot-flies, whose maggots live in certain tumours in the skin of oxen, in the stomach and intestines of horses, and in the nostrils and other cavities of sheep, goats, and deer, have occasionally produced nasal infection in man, leading to inflammation and even necrosis of tissue. The grey flesh-fly, common everywhere in summer and autumn, in place of eggs produces living maggots which have sometimes been observed in abscesses in the human nose and ear; they number 50 to 80 in a swarm and change to pupae in five to eight days, developing into flies eighteen to twenty days later.

On the whole it appears probable that the centipede did not enter the patient's nostril in its adult state, but was accidentally transferred there at some earlier phase of its development. The photograph, which could be taken only after the creature had been chloroformed, gives but a poor idea of its normal active appearance.

Eastbourne. J. GORDON WILSON, M.D., Ch.B.

ILEO-ILEAL INTUSSUSCEPTION DUE TO A FIBROMA.

THE occurrence of a case of intussusception in an adult is sufficiently unusual to merit recording.

A miner, aged 25, was admitted to the Nottingham General Hospital with a history of having had, during the past four months, five attacks of vomiting associated with pain referred to the umbilicus. This pain was described as one of distension; it was accompanied by rumbling as though wind was trying to pass. Defaecation gave relief, but latterly aperients in increasing doses had been required.

The abdomen was distended with a well-marked "ladder pattern"; it was tympanitic and there was some epigastric tenderness. Rectal examination revealed nothing abnormal. An enema produced a constipated result, subsequent to which the bowels were well opened naturally.

Through the right linea semilunaris the peritoneal cavity was opened; small gut distended to the size of the patient's fist presented with collapsed coils of ileum below it. On passing the hand down into the right side of the pelvis a mass could be felt like an intussusception; this was brought up into the wound and proved to be one of the ileo-ileal type. Reduction was easy, only about two inches of gut being involved. At the apex of the intussusception a lump could be felt in the lumen of the bowel, so after applying a clamp across the loop the intestine was opened longitudinally and a tumour about 2 inches by 1 emerged; this was cut away along with its short pedicle. The wound of the intestine was then stitched up transversely with a loop on the mucosa stitch and a superimposed Lembert suture. Before releasing the clamp the ileum proximal to it, which was not only greatly distended but also hypertrophied, was lightly clamped for a small area, and a purse-string suture was inserted. At the middle of the area a puncture was made, and a large catheter was inserted. On removing this second clamp much flatus and several ounces of faecal fluid escaped through the catheter. As the catheter was withdrawn the purse-string suture was tied and the puncture wound then buried. The abdominal wound was repaired, a muscle drain being inserted.

The patient made an uninterrupted recovery, and six months later wrote "I do not feel anything from my operation."

Dr. Kilian Clarke, pathologist to the hospital, reported that a section of the tumour showed it to be a pure fibroma.

I wish to acknowledge my indebtedness to Mr. C. H. Allen for permission to treat and describe this case.

Nottingham. J. LLEWELLYN DAVIES, M.B., F.R.C.S.

AN UNUSUAL INJURY TO THE PATELLA.

THE following case may be of interest, having regard to its comparative rarity.

I was recently called to a woman who, while chasing her husband round a table, struck her right knee against the table-leg, and found that she could not move the limb immediately afterwards. On examination the leg was found to be partly flexed at the knee-joint, and was "locked." Where the patella is normally found was a marked angular swelling, which on palpation proved to be the patella. The blow on the medial edge had dislocated the bone by rotation on its ligament, and it had come to rest between the lateral and medial tibial surfaces of the femur. Manipulation was attended by severe pain, but, under an anaesthetic, reduction was easily made by flexion of the knee and "rotation" of the patella into position. After twenty-four hours free and painless movement, without effusion, was obtained.

Newhall, Burton-on-Trent. E. M. R. FRAZER.

Reports of Societies.

ULTRA-MICROSCOPIC VIRUSES.

DISCUSSION AT THE ROYAL SOCIETY.

SIR ERNEST RUTHERFORD, O.M., P.R.S., presided over a discussion at the Royal Society, on February 28th, on ultra-microscopic viruses infecting animals and plants. So much interest was evinced that a continuation was arranged for March 14th. On this occasion, unlike ordinary meetings of the society, the proceedings took the form of a conference, without set papers.

The Work on the Filterable Virus and some Unsolved Problems.

Sir CHARLES MARTIN, F.R.S., who opened the discussion, said that the discovery of the first filterable virus was made by a Russian botanist nearly forty years ago; he was looking for the cause of mosaic disease in tobacco, and, failing to detect any visible microbic agency, filtered the juice of the infected plant through a porcelain filter and found the filtrate infective for healthy plants. Later, Loeffler and Frosch discovered that the contagia of foot-and-mouth disease could be passed through a porcelain filter. Many pathologists then started investigations from this point of view on diseases which seemed to have no adequate cause, with the result that now more than a hundred diseases were attributed to invisible or filter-passing organisms. These viruses included bacteriophage, supposed to be an ultra-microscopic organism parasitic in bacteria, and those of various plant, insect, and mammal diseases. In this group of diseases had been included the various poxes, also nervous diseases such as poliomyelitis and encephalitis, sand-fly fever, dengue, yellow fever, possibly measles and mumps, and even influenza. Typhus fever and Rocky Mountain spotted fever had also been placed, perhaps unjustifiably, in this group. The members of the group had nothing in common clinically or epidemiologically. In some cases the path of infection was direct; in others it was through air, or by food, or the bites of insects. The only passport for inclusion in the group was that somebody had succeeded in getting an infective filtrate through a filter designed to keep back ordinary micro-organisms. The group was continually having new admissions and expulsions. Chicken diphtheria, for example, had been expelled, also trachoma and scarlet fever, on the ground that a microbial origin had been satisfactorily established for these diseases. One feature about certain of these virus diseases, not common to bacterial diseases, was the cellular response of the host by the formation of curious bodies in some of the cells affected. Whatever their true significance might be, they were so characteristic that in some cases they could be used for the diagnosis of the disease.

Varieties of Filters Used.

Turning to filters and their structure, Sir Charles Martin said that these were of two kinds: mineral filters made of unglazed porcelain of different grades or of diatomaceous earth with a little asbestos, or colloidal membranes of different permeabilities. A good deal of work had been done in the endeavour to determine the average size of the pores; one method rested on Poiseuille's law, another on the amount of pressure involved in overcoming the surface tension by blowing bubbles, but the latter involved a good many assumptions which did not seem justified. Whether the particle would pass through the filter or not depended not only upon the dimension, but upon the action between the particle and the walls of the crevices, and upon whether the particle was rigid or could be distorted radially or was capable of motility of its own. Finely ground porcelain would stop particles of about the order of 0.2 micron, and coarser ground of about the order of 0.5. Anything above 0.2 micron being held back, it was obvious, in view of the limit of resolution of the microscope, why anything that went through should be invisible. It was merely a coincidence that these organisms should be invisible as well as filterable. The range of discovery, however, could be increased by the use of ultra-violet light, and he understood that Mr. Barnard, with a wave-length of about 250$\mu\mu$, had been able to photograph particles down to a size of 0.08 micron. Some of the viruses ran through the filter without any serious fall in concentration; others appeared only to pass through the filter by accident. Among the good filterers were the viruses of mosaic diseases, foot-and-mouth disease, and the Rous sarcoma; on the other hand, the viruses of typhus, trench fever, and Rocky Mountain spotted fever might have been passed through some of the coarser filters, but most of the people who had tried the experiment had not been successful, and the same was true of the poxes, with the exception of the particular strain of vaccinia virus discovered by Levaditi and called neuro-vaccinia. The virus of canine distemper was a filter-passer, but a poor one, and for many years it awaited verification.

The Process of Filter Passing.

What were the dimensions, then, of some of the good filterers? There were many pitfalls in trying to determine this point. Experiments had been made in filtering through collodion membranes of different permeabilities, and testing the passage of particles of known size. Colloidal solutions of arsenious sulphide had been used, also collargol, a colloidal suspension of silver, both of which had particles of a definite order of size. Although the experiments of some investigators suggested a much smaller size—the virus of foot-and-mouth disease had been stated from one series of experiments to be not bigger than one of the smaller protein molecules—yet a good many others had not been able to repeat these observations, and had given the order of magnitude of some of the good filterers as equal to that of collargol particles—that is, 20$\mu\mu$. How small could a living organism be? There must be a certain size for life to begin, because it involved an aggregate of molecules, and rather complicated molecules at that. It looked as if an alternative hypothesis was required as to the nature of these viruses. Some sort of catalyst had been suggested, but this the speaker found extremely difficult to visualize, and he preferred to consider that the dimensions were not of the small order suggested by some observers, and that these viruses were living organisms.

What was the simplest common measure of a living organism? First, the capacity to take dissimilar molecules and make them into molecules similar to its own; secondly, multiplication; thirdly, variation, following upon not quite perfect assimilation. After careful consideration of all the facts of which he was aware, he had not been able to find any essential distinction between viruses and microbes except their size and cultivability on inanimate materials. The viruses being so very small, perhaps their powers of assimilation were extremely limited, and therefore required to have their foodstuffs prepared three parts of the way before they could use them to build up new viruses. The evidence that they had been cultivated apart from living cells was unconvincing; many of them had been cultivated in symbiosis with living cells and in glass vessels. Bacteriophage could be cultivated in growing bacteria, Rous sarcoma in pieces of spleen tissue, and Rocky Mountain spotted fever and typhus had apparently been so cultivated, or at least the virus had remained alive for a very long time. It looked as though they were obligatory parasites, and support was given to that view by the apparent

absence of the saprophytic virus. With ordinary micro-organisms only a fraction of 1 per cent. were pathogenic to animals or plants; the others subsisted upon inanimate material.

Finally Sir Charles Martin emphasized some of the difficulties in the work on filter-passers. Work with an agent which could not be seen or propagated in the ordinary way, and in which every single observation required the inoculation of an animal or plant, and a period of waiting of perhaps weeks or months for the answer "Yes" or "No," was rather heartbreaking. No method was available for securing pure cultivation of viruses. Freedom from external contamination might be secured, but if two viruses got mixed up there was no simple method of separating them except by inoculating them into animals which would be immune to the one and not to the other. It was extremely difficult to decide in a human disease whether it was due to a filter-passer or not. It seemed absurd, for example, that after all these years it should still be uncertain whether influenza was due to a filter-passer or to such an organism as Pfeiffer's bacillus. If there was any animal which could reproduce the disease, many people in that room could give the answer to the question within a fortnight.

Virus Diseases of Plants.

Professor P. A. MURPHY said that virus diseases of plants gave the impression of being a more homogeneous group than animal virus diseases appeared to an outsider. The difficulty was that while it was easy to filter the sap of a plant and to obtain a filtrate free from any visible life, in numerous diseases of plants presumed to be virus diseases it was not possible by mechanical means to infect the plant with the filtrate. On the other hand, virus diseases could be transmitted from plant to plant by grafting or pruning, and this was looked upon as the hall mark of virus disease in plants. Furthermore, many of them could be transmitted by an appropriate insect vector. It was characteristic of virus diseases of plants that they were systemic and affected all the plant tissues—leaves, stem, root, everything except the seed—which, among plant diseases in general, was very unusual, and suggested that the agent producing these virus diseases was entirely distinct from the fungi, bacteria, and occasionally protozoa which produced other diseases in plants. Unlike animals infected with virus diseases, the majority of the plants infected were carriers.

Dr. KENNETH SMITH dealt with the insect carriers of plant viruses. Was the insect the host of the virus or merely a mechanical carrier? In the mosaic group of diseases it was fairly obvious that the insect was not any more than a mechanical carrier, but in certain other plant diseases the virus was spread only by one particular insect, and in such case it would appear that there was some obligatory action between the virus and the insect. As to the length of time for which the virus remained infective in the body of an insect carrier after it had no longer access to the infected plant, in one case the insect had been found infective after two months' feeding upon a plant which was immune. The offspring of infected aphids had been found not infective to the healthy plant.

Dr. J. A. ARKWRIGHT, F.R.S., added a short contribution on the virus in foot-and-mouth disease in animals, which virus, he said, was easily filterable. The infectivity of foot-and-mouth disease among naturally susceptible animals was very high. After an attack of the disease the animal was completely resistant for a time, not for as long as the immunity after scarlet fever or measles, but for longer than that after herpes or erysipelas. During the period of immunity the blood contained antibodies, which could be shown experimentally to neutralize the virus.

Ultra-microscopy with Ultra-violet Radiation.

Mr. J. E. BARNARD, F.R.S., explained some of the difficulties from the microscopical side. With a view to trying to improve the microscopical method, he had almost entirely devoted himself to the light of shorter wave-lengths. It must be remembered that, in addition to their minuteness, these viruses might possibly have other characteristics; their optical quality in terms of visual light was not different from that of the medium or body fluid in which they were, and this prevented them from being seen by any means ordinarily available. While, however, this characteristic might hold good for a given range of wave-lengths, he could not imagine that it was true for all available wave-lengths. If a body had the same refractive index as its medium for, say, the middle part of the visible spectrum, it was highly improbable that it would have the same optical constants in some part of the ultra-violet. Again, the light used in microscopical work determined in large part the order of resolution; therefore, it appeared that with light of shorter wave-lengths it should be possible to see some of the characteristics of a body which was smaller than could be seen by visual light. On the physical side the perfection of a microscopical apparatus for use with radiations extending down to the limit of transmission by quartz presented in theory no difficulty at all. The practical difficulties, however, were very considerable. He had now collected a fair amount of apparatus whereby one could, with reasonable certainty and fair accuracy, photograph bodies and organisms of smaller size than was possible with the ordinary microscope. One of the difficulties with ultra-violet radiations was that any source of light used must be of the nature of a spark. To get anything like a photograph of value of a body which was in fluid, and therefore often in rapid motion—if not motion of its own, certainly in rapid Brownian motion—such a photograph had to be obtained in an extremely short time. One recent development was a dark-ground illuminator for ultra-violet rays, and by this means it was hoped to reduce the exposures to more workable limits. Mr. Barnard showed on the lantern screen a number of results obtained by this method, revealing clearly fine differentiations of granules of an order of size of something less than 0.2 micron.

Sir ERNEST RUTHERFORD asked Mr. Barnard what ratio his experiments with ultra-violet rays bore to the ordinary microscope in respect to the size of image obtained.

Mr. BARNARD replied that if an organism of the order of size of 0.3 micron could be properly seen by an ordinary microscope, using a wave-length of 5,000 Angström units, then, working with 2,500 Angström units, one should be able to see satisfactorily an organism of the order of 0.08 micron. Asked whether there was any likelihood of getting beyond this, Mr. Barnard replied that the only limitation was the difficulty of getting fused quartz of requisite quality.

Filterable Tumours.

Dr. W. E. GYE said that the filterable tumours of fowls, discovered by Peyton Rous, constituted an exceedingly important group of new growths because an effective filter-passing agent could be extracted from them easily. In this respect they contrasted sharply with the tumours of mammals. The agent might be obtained in various ways, but he and those working with him had found that the method of obtaining it in greatest concentration or activity was to treat the tumour tissue with a saturated salt solution which he described. The filtrate obtained was usually infective in doses of about 0.001 c.cm., and the tumour produced was a true tumour developed from the connective tissue of the animal which was inoculated; from this tumour further infective filtrates might be obtained. Thus the essential phenomena encountered in filterable viruses were met with here—namely, that apparently the agent could reproduce itself indefinitely in the infected tissues of the animal. There was a large group of filterable tumours of very diverse structure and biological character, all yielding an infective filtrate specific to fowls, and each infective filtrate gave rise only to tumours of the type from which it was obtained. If, for example, a fowl were inoculated in one breast from a filtrate of spindle-celled carcinoma and in the other from a filtrate of endothelioma, the original tumour in each case would be imitated. When Rous first discovered these filterable tumours most investigators refused to accept them as true tumours, but to-day, after eighteen years, they were universally admitted to be actual new growths. The filterable agent had given rise to a good deal of controversy. In the belief of some physiologists it was an enzyme. One French investigator rejected both the virus and the enzyme, and declared that the agent was a "physico-chemical principle," whatever that might mean. Dr. Gye went on to refer to the

destruction or loss of activity of the filtrate on incubation, a characteristic which he had been studying now for some years. In respect to this property also it resembled a good many filterable virus diseases. He concluded with some remarks on antiseptics. The agent of these tumours, whatever its precise character might be, was susceptible to the whole range of antiseptics as known and applied to ordinary bacteria. The general conclusion was unavoidable that the action of antiseptics upon these agents was the same as that which was expected and known to occur in the case of ordinary organisms. One antiseptic which he had studied with special care in this connexion was acriflavine, which would act in the presence of serum. If one tried to kill the virus of bovine pleuro-pneumonia with acriflavine in the presence of serum, should the serum be inactivated by heat or by old serum, the dilution of acriflavine required to kill the organism was 1 in 5,000, but if the serum was fresh, then the virus of pleuro-pneumonia could be killed at dilutions of 1 in 40,000 or 1 in 50,000. Exactly the same thing applied to the action of acriflavine on the filtrates of the tumours of which he had been speaking, and from such evidence as this he was convinced that the agents in these tumours were of the same order as the pleuro-pneumonia virus, and also that these organisms were of the same order as ordinary bacteria.

At the adjourned discussion, on March 14th, Professor Ledingham and others are to speak.

RADIUM TREATMENT OF MALIGNANT DISEASE OF THE UTERUS AND OVARIES.

A MEETING of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine was held on February 15th, with Dr. J. S. FAIRBAIRN in the chair, when Professor J. HEYMAN (Stockholm) read a paper on the uses of radium in the treatment of malignant disease of the uterus and ovaries.

Professor Heyman opened by stating that for a long time it had been known that certain carcinomas could be cured by radiological treatment, the term "cure" meaning the absence of recurrences for a period of five years or longer; cancer of the uterus belonged to this category. Radiological treatment, when carefully adjusted, excited a healing process characterized by destruction of the tumour cells and regeneration of the tissue which was the seat of the destructive process. So in a cured cervical cancer the cervix and vagina were found to be restored to their normal outlines. In most cases, however, a moderate atrophy of the uterus and vagina remained. Only those who had been engaged in radiotherapeutic work for some considerable time were fully able to realize the exceedingly great care and precision with which radiotherapy had to be handled, and the severe damage which might be inflicted on a number of patients by unskilled operators. The Radiumhemmet, founded by Forssell in 1910, was a special clinic for radiotherapy, particularly intended for the treatment of malignant growths; and, from the very beginning, treatment was only applied in the case of inoperable malignant tumours. When undoubted results had been gained in these cases, the treatment of borderline cases, and, lastly, operable cases, was undertaken. Thus, during 1910–18, the inoperable cases in the series made up 80 to 90 per cent. of the total number. But, none the less, in these inoperable cases, five-year results fully comparable with the best results obtained by surgical operation were realized. Forssner and Essen-Möller had led the way in submitting operable cases of cancer of the cervix for radiological treatment. During the period 1914–23 inclusive, 737 cases of carcinoma of the cervix had been treated at the gynaecological department of Radiumhemmet. The follow-up department was efficient, and was greatly aided by official Government recognition. Of the 737 patients primarily radiologically treated, 170 were alive, free from recurrences five years after the treatment—23.1 per cent. five-year cures. During the period 1914–23, 188 operable cases were treated; of these, 82 were alive, free from recurrences after five years—43.7 per cent. cures among operable cases. Inoperable and borderline cases during the same period numbered 549; of these, 88 patients were cured and alive, free from recurrences after five years—16 per cent. of cures. A detailed account of the treatment would be found in *Acta Radiologica*, vol. x, fasc. 1. Professor Heyman maintained that the governing principle in the local radium treatment was the small number of relatively heavy doses given within a relatively short period of time, and at intervals adjusted with reference to reaction and course of healing. Thus, within a month, there were three applications which occupied from nineteen to twenty-three hours, and in every case a filter equivalent to at least 3 mm. of lead was used. Finally, percutaneous treatment with radium at a distance showed remarkable primary results; for this at least 2 grams of radium were required. Forty-six patients with cancer of the body of the uterus had been treated with radium from 1913 to 1921; 45.7 per cent. were inoperable. Of these, 20 were alive and free from symptoms at the end of five years—43.5 per cent. In the treatment of cancer of the body the same principles were followed as in cancer of the cervix, the vaginal dose being decreased. Operation was advised if at the end of about two months after treatment symptoms of recurrences appeared. Radiological treatment alone would not yield any lasting results in carcinoma of the ovaries, and it was necessary to adopt a combined surgical and radiological treatment. Radium treatment in these cases was combined with *x*-ray treatment, and should the tumour become small and movable surgical aid was called in. It was of the utmost importance that the treatment of gynaecological cases should be left in the hands of the gynaecologist trained in radiology. The point was emphasized that the good results that had been obtained, although largely dependent upon the technique employed, were, perhaps, above all due to the fact that the treatment had been attached to a radiotherapeutic clinic.

ASTHMA.

AT a meeting of the Section of Medicine of the Royal Society of Medicine, held on February 26th, with Dr. R. HUTCHISON in the chair, Professor KARL HANSEN of Heidelberg read a paper on the allergic and psychical factors in asthma.

Professor Hansen said that asthma was a clinical term embracing a whole distinct symptomatology. He excluded all forms of cardiac, uraemic, and hysterical asthma, and dealt only with bronchial asthma, characterized by spasms of the bronchial muscles and increased exudation. At the present day the cause of this excitement of the parasympathetic nervous system was thought to be some allergen, and Professor Hansen stated that he intended to exclude non-allergic bronchial asthma. Dealing first with the phenomenon of allergy, he showed how Blackley had brought out an ingenious theory to account for hay fever many years ago, and how this theory was confirmed by the discovery of anaphylaxis fifty years later by von Behring and Richet, and applied clinically by von Pirquet, who introduced the conception of allergy. Professor Hansen then sketched briefly the theoretical foundations of allergy, and laid down the criteria upon which the diagnosis of an allergic disease could be based. These included an exact history, a positive result of the cutaneous test, the passive transferability of the cutaneous reaction to healthy persons through the serum of the diseased person, the inspection of the patient's environment, and the proof of the existence there of specific allergens, the experimental production of the disease by exposing the patient to the influence of allergens, and, lastly, the disappearance of the symptoms of the malady after the removal of the allergens from the surroundings of the patient. While a study of the exogenous factor was of importance in allergic diseases the endogenous factor must also be considered, for the presence of allergens in the surroundings of human beings did not necessarily bring about illness or an attack. In the first place, only a small percentage of mankind seemed to have any disposition to allergic disorders, and there was evidence that the allergic patient had inherited a particular constitution. Secondly, it was well known that animals which had been subjected to anaphylactic shock were for a time immune to the action of allergens, a principle utilized by Freeman in the treatment of hay fever by means of desensitization. This might explain the fact that patients susceptible to certain allergens could at times withstand the presence of

these allergens without any reaction at all. A third factor, frequently overlooked, was the conditions under which absorption of the allergens took place, as illustrated by the case of a workman who for years had applied a certain preparation to furs by means of a paint-brush, but only had his first attack of asthma when he used this preparation, to which he was sensitive, in a spray. Climatic influences also played a part in altering sensitiveness, and so also did various influences of periodicity in the course of life, as, for example, was shown by the greater tendency of asthmatic women to suffer attacks shortly before menstruation. Professor Hansen next discussed the significance of the psyche in the production and control of organic disturbances. He expressed the view that the "person" alone was in the proper sense the subject of biological and clinical observation and treatment, a view which must involve a study of the relations of the psyche to the body. An investigation into the psychical factors in disease was very difficult, and liable to serious errors. Nevertheless, it was important to discover if psychical factors could be proved to influence the disposition to disease in the face of known pathogenic substances affecting the organs. The study of asthmatic patients under the influence of hypnotism gave some help, but there were many indeterminable influences at work. Professor Hansen then described in detail the life-history of an asthmatic patient, aged 50, who had suffered from the malady since 10 years of age. This patient showed a positive cutaneous reaction to horse dandruff and to bed feathers, and had frequently experienced attacks if she inhaled the dust when bedding containing feathers was shaken near her. She also revealed a complex psychological situation, and there was a remarkable association between the asthmatic attacks and certain emotional experiences. Professor Hansen finally sketched his theory of the association between allergic and psychical factors in asthma. It seemed that in asthma there was an ever-renewed intrusion of allergens into the organism, but, except in extreme cases, these intruding physical agents only led to a derangement expressing itself as illness when they found the body prepared by certain psychical experiences. It was certain, said the speaker, that the vegetative nervous system played a most important part.

Dr. M. CULPIN, in opening the discussion on Professor Hansen's paper, said that the subject of asthma was full of difficulties for the clinical psychologist. In the literature it was possible to find the case described by Professor Hansen very closely paralleled. He described a case under his own care in which asthma had been present for twenty years, brought on by very different stimuli, which, on investigation, were shown to be linked together by association of ideas. Following the revelation to the patient of this association the attacks ceased. In patients subject to pathological states of anxiety there occurred attacks of "panic" in which, together with the psychological disturbance, various objective signs of fear were present, and in some cases symptoms of cardiac or gastro-intestinal disorders appeared, replacing the anxiety state. Asthma might bear a similar relation to the anxiety state, but Dr. Culpin emphasized that this claim was neither absolute nor exclusive. He looked upon the allergic phenomena as "freakish manifestations of a biochemical Puck," and he thought some help in correlating them with the psychic factors might be found in the study of conditioned reflexes.

Dr. R. D. GILLESPIE said that the psychiatrist had not much opportunity for studying asthmatic patients, since they did not come to special hospitals dealing with functional nervous disorders. In the literature there was also a paucity of references to the psychological aspects of asthma. It would be instructive to know how many neurotic subjects had had attacks of asthma in their previous history. He was interested in the discussion of the possible symbolic value of asthmatic attacks, but he thought it important to distinguish psychogenic dyspnœa from true asthma. He thought that asthmatic patients might be looked upon as having a constitutional pattern which could express itself as an asthmatic attack.

Dr. E. P. POULTON referred to some experiences with migraine, an allied disease in his opinion, which illustrated the effect of psychical factors in influencing the disorder.

Dr. G. H. ORIEL recounted a case in which, following a severe emotional experience in the home, a girl developed angioneurotic oedema, and her mother urticaria. Later, when affairs were settled, it was found that the daughter, who had developed egg sensitiveness, had once more become normal. He referred also to the high blood sugar of the anxiety state, which appeared to develop through the action of the endocrine system.

Dr. A. P. CAWADIAS said that he had seen cases of asthma develop after emotional upsets, but such patients also reacted to certain allergens. Treatment by diet and specific anti-anaphylactic remedies removed the asthma. He thought that the explanation of the interrelation of the psychic and allergic factors would come with a better knowledge of the vegetative nervous system, recent work on which was vague and meagre.

Dr. E. PARKES WEBER thought it was impossible to get away from the fact that psychic factors could influence asthma. The reaction of the body to the psychical factors of disease depended largely on the pattern of the individual. The effect produced was analogous to that of physical agents in the familiar "seed" and "soil" hypothesis.

Dr. G. GRAHAM inquired what part adrenaline played in the relationship between psychical factors and asthma. In his view it was very important to obtain a method for estimating the amount of adrenaline in the blood.

DEATHS UNDER ANAESTHETICS.

AT a meeting of the Section of Anaesthetics of the Royal Society of Medicine on March 1st, with Dr. ASHLEY S. DALY presiding, a paper was read by Dr. GERALD M. SLOT on deaths under anaesthetics, with special reference to their pathology.

Dr. Slot said that the material upon which the paper was based had been obtained during the last five years, through the courtesy of certain of the London coroners, in respect to anaesthetic deaths occurring within their jurisdictions. Broadly speaking, the *post-mortem* findings in deaths from anaesthetics could be classed under five headings: (1) status lymphaticus (a very small but definite proportion of cases); (2) some gross accident during the administration of the anaesthetic; (3) such abnormalities as were frequently present in cases other than anaesthetic cases (for example, myocarditis, arterio-sclerosis), and in which the anaesthetic could not be regarded as culpable; (4) gross disease, such as intestinal obstruction or general peritonitis, in which the prior condition of the patient must have been precarious; (5) changes occurring in deaths under spinal anaesthesia and also nitrous oxide anaesthesia. It was not possible for the pathologist to state, except in cases of grossest overdosage, how much anaesthetic had been given. The smell of the anaesthetic noticed on opening the thorax varied according to the time at which the examination was made after death. The *post-mortem* findings in status lymphaticus were quite definite, including enlargement of the thymus, hyperplasia of the glandular tissue at the base of the tongue, usually some excess of the tonsils and oral lymph tissue, and hyperplasia of the lymphatic tissues of the gastro-intestinal system, the stomach having a characteristic "sago-like feel." There was usually, but not always, enlargement of the abdominal lymphatic glands. Dr. Slot discussed the morbid physiology and pathology of the thymus in relation to these deaths. One of the first things the pathologist considered was the weight of the thymus gland, but it was very difficult to be dogmatic about this, more especially as the scales for ascertaining weights in mortuaries were usually defective. He believed that in status lymphaticus there was a general dyscrasia of more than one endocrine organ, and the thymus was not alone inculpated. He noticed a similarity between deaths occurring in this condition and deaths from anaphylaxis. So many different opinions were held as to the cause of death in status lymphaticus that it was evident the real cause was not yet known. With regard to deaths occurring as a result of gross accident in administration, as a rule the *post-mortem* changes were quite obvious, including the red and oedematous condition of the buccal and oral mucosa, and congestion of the lungs, which smelt strongly of the anaesthetic. Death in these cases was probably due as much to shock as to any other factor. He described three recent cases which he had investigated, and in each case,

in his opinion, the anaesthetist was entirely blameless. In the first case there was pulmonary embolism, which he believed to be more frequent than was supposed in anaesthetic deaths; in another there was acute pulmonary oedema, and death was probably due to the asphyxial effects of the oedematous fluid; and in the third there was coronary thrombosis. In discussing various theories of the action of anaesthesia Dr. Slot mentioned that he had tried to verify the assertion that the anaesthetic increased the fluidity of the lipoid cells, but without success. Speaking of various anaesthetics, he said that in the cases he had investigated only two deaths had been definitely due to ethyl chloride. This anaesthetic had a marked effect on the blood pressure. Vagus inhibition of the heart was more likely to occur with ethyl chloride than with ether. Respiration always ceased before circulation, an important point to bear in mind in restorative technique. With regard to nitrous oxide, his impression was that with short nitrous oxide anaesthesia death did not occur, though he had seen three deaths when nitrous oxide was used for a longer gas-oxygen anaesthesia, but in these cases the operations were of great severity, and his view, which was endorsed by the coroner, was that the patients had died from surgical shock. In nitrous oxide death, again, respiration ceased before circulation. With regard to chloroform, he was convinced that some of the deaths from chloroform were acidosis deaths. Delayed chloroform poisoning was not very common, but he had seen two fatal cases. In deaths under spinal anaesthesia which he had seen the *post-mortem* examination revealed nothing at all. It was said—but he had not seen it—that in these deaths there was evidence of asphyxia.

Mr. A. DOUGLAS COWBURN, one of the London coroners, substantiated as far as his experience went the main contentions of Dr. Slot. The distinction between deaths from an anaesthetic and deaths while under an anaesthetic was one which many people failed to realize. Death might occur from the effects of shock, due to surgical manipulation or otherwise: from toxaemia; or from the desperate measures to which the surgeon and anaesthetist had to resort in the case of a patient extremely ill; but very rarely had death occurred, in his experience, from what might be called an overdose of anaesthetic. The only exception was with ethyl chloride, which he frankly confessed he detested. He had himself seen it given, and had seen one death under it. When death did occur under ethyl chloride, however, it was usual to find that the anaesthetic had been given by some resident officer, not by an experienced anaesthetist. As to status lymphaticus, he agreed with Dr. Slot that it was ridiculous to give a diagnosis of this condition merely because the Malpighian corpuscles of the spleen were enlarged or because there was an excess of lymphoid tissue here and there. The thing must be looked at all round, otherwise the diagnosis only brought discredit. Three years ago an eminent surgeon told him definitely that he did not believe in the existence of status lymphaticus, which had been invented only to shield the anaesthetist. Mr. Cowburn was able to tell him from his personal experience of two deaths from status lymphaticus which had come under his observation in which no anaesthetic had been administered at all. The *post-mortem* appearances suggested status lymphaticus and nothing else. He gathered that Dr. Slot considered chloroform a dangerous drug. Many years ago, when the speaker was a hospital resident, the staff were told that young children, and also women in labour, could be given chloroform with impunity. Now he learned that pure chloroform was never given. Mr. Cowburn added a word as to the difficulties which medical men encountered in their work in public mortuaries. In the majority of cases the mortuaries attached to London coroners' courts were disgraceful; there was one conspicuous exception (Wandsworth); Paddington was better than the rest, and in his own jurisdiction (Southern and Clapham districts) he had been able to induce the authorities entirely to remodel one of the mortuaries, and to fit it with every convenience for the doctors to carry out their responsible duties.

Dr. JOSEPH BROMFIELD thought that both Dr. Slot and Mr. Cowburn had been too sweepingly kind to the anaesthetist. It had always seemed to him that the question of deciding the cause of death under an anaesthetic was extremely difficult. How was one to say that the cause was surgical shock and not the anaesthetic? With regard to the cause of death in spinal anaesthesia catastrophes, many believed that it was the extreme action of the spinal anaesthesia in lowering the blood pressure. He could not agree as to the dangers of ethyl chloride. It had never given him a moment's anxiety.

Dr. C. F. HADFIELD also said that he had had no anxiety with ethyl chloride, except on two occasions, both of them long ago, when he was less experienced. He agreed, however, that it was necessary to teach students how potent a drug it was, and how rapid in its action.

Dr. C. L. HEWER mentioned that in the dental department of the Queen's Hospital for Children about 2,500 cases were dealt with every year, and for the past fifteen years there had not been a single death. All the cases had ethyl chloride, and in about two-thirds of them the anaesthetic was given by residents who had no special experience.

Dr. Z. MENNELL thought the chief danger of ethyl chloride arose from the fact that the comparatively inexperienced did not realize what a powerful drug it was and how quickly anaesthesia occurred. He thought Mr. Cowburn was too hard on chloroform; in certain cases late chloroform anaesthesia was essential.

The PRESIDENT took the view that ethyl chloride was a dangerous drug, and he detected an inconsistency in Dr. Hadfield's remark that it was safe, but that students should be taught its potency.

Dr. SLOT devoted his reply chiefly to some further considerations on status lymphaticus, which, he said, was probably not one condition, but several conditions grouped together.

PROTEIN SHOCK THERAPY.

AT a meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland, held in the Royal College of Physicians on February 15th, with the president, Dr. R. J. ROWLETTE, in the chair, Dr. V. M. SYNGE read a paper on protein shock therapy.

Dr. Synge said that treatment consisted in the intravenous injection of T.A.B. vaccine, two injections being given, the first containing 100 million *B. typhosus*, 50 million paratyphoid A, and 50 million paratyphoid B, while in the second injection, given five to seven days afterwards, there were double the number of organisms. In about an hour after injection a rigor occurred, with a sharp rise in temperature to 103° or 104° F. There was severe headache, with pain all over the body and sweating; in some cases there was vomiting with diarrhoea. Aspirin and, in some instances, morphine were given to relieve the pains. In cases which did well the temperature was always normal within twenty-four hours; if the temperature remained up for forty-eight or seventy-two hours there was never any improvement as a result of the treatment. Twelve cases (chronic sciatica, chronic arthritis, persistent muscular rheumatism) were treated. In most instances there was slight temporary benefit, in some no improvement whatever, and in a few cases permanent cure. Particulars of two illustrative cases were given as follows:

A man, aged 49, had had right-sided sciatica for nine years, with tenderness along the course of the nerve and wasting of the right thigh; the hip-joint was normal. He had been unable to work for nine months. After treatment the pain disappeared completely and the patient resumed work. When last heard of fourteen months after treatment he was still free from pain.

A man, aged 25, had had left-sided sciatica for four months. After the first injection there was a rigor with pyrexia, the temperature not becoming normal for forty-eight hours. After the second injection there was again a rigor, with high temperature, which did not fall for seventy-two hours. No improvement followed the treatment.

Dr. Synge said that this method of treatment was not new; it was often unsuccessful, but it deserved wider trial in chronic cases of sciatica and rheumatic conditions where ordinary methods of treatment had been employed and had failed. It should obviously not be employed in the case of feeble patients, or of those with cardiac disease.

The PRESIDENT said he had never understood why vaccines were the form of protein which were most commonly employed, since the T.A.B. vaccine, in addition to its

protein content, must contain a certain amount of toxin and cause some toxaemia, a complication which would be avoided by using proteins in which there was no toxin. The method of protein shock had been used largely in acute conditions, such as puerperal sepsis, but with poor results. It was, however, encouraging to hear of anything which gave immediate results in such an acute condition as sciatica. He wondered if the considerable burns which were produced by the use of Corrigan's button in this condition caused protein shock.

Dr. PRESTON BALL was disappointed that Dr. Synge had not obtained better results from protein shock therapy. He personally had treated fifteen cases, following the method advocated by Dr. Yeomans of Harrogate, with very good results. The objection which he personally found to the treatment was the extraordinarily alarming results which it produced. About an hour after the first injection the patient's temperature went up, sometimes exceedingly high; he looked and felt ill, but after a few hours the condition subsided. Dr. Ball had found the treatment successful in cases where there had been profuse sweating, occurring immediately after the injection, and the temperature had come down rapidly. He thought that in the case mentioned by Dr. Synge which had not been successful the result might have been good if the treatment had been continued. The routine course included at least five injections. In one case of his own in which, for unavoidable reasons, he had only been able to give two injections, the patient not only got no better, but became worse. He asked whether Dr. Synge considered it necessary to make sure that no kidney disease was present before giving the treatment, since T.A.B. vaccine contained a little carbolic acid, and was likely to produce haematuria. He regarded the treatment as being of very great value in cases where nothing else had succeeded, and where no focus of infection could be found.

Dr. E. T. FREEMAN referred to a paper which he had read before the Medical Section about four years ago on protein sensitization, and said he had first used this treatment for cases of chronic urticaria and similar conditions. He had at first used peptone, but now used T.A.B. vaccine; this produced a very rapid effect in a very short time. He mentioned a case of mucous colitis in which he had given about twenty injections; the motions had decreased from twenty a day to three a day. The patient had remained well for some months, but then returned to hospital, and was given an enema, which had started the colitis again; on this occasion the treatment had not been successful, and caecostomy had been performed. This case, he thought, showed that sometimes in the same patient, with the same condition, the results would vary. In cases of bony involvement he had found that the treatment sometimes brought about alleviation of pain, but the results were never permanent. He also referred to a post-puerperal septic case in which no septic focus had been found, and in which he had suggested an injection of mercurochrome. One hour after the injection the patient's temperature had gone up to 107° F., and had remained very high for four days; it had then dropped to 100° F., and had never risen above that, the patient making a complete recovery. Dr. Freeman thought that the great objection to this method as a routine was that it was utterly impossible to foretell the result, and nothing could be promised to the patient; some did very well, and others did not. It was an unpleasant treatment, and he thought that if it were possible to know the kind of case that would respond to it, it might be used with greater assurance and greater frequency.

Dr. G. E. NESBITT referred to the great variety of proteins and the different degrees of shock which they produced. The procedure seemed to be largely on the lines of the malarial treatment of parasyphilitic infections, a method which he personally disliked; he did not think it would succeed as a permanent form of therapy. He asked whether Dr. Synge had made any observations on the white cell content in his cases, and said this might be of interest in view of the different results which would be obtained. The leucocyte reaction might have varied, and it would have been interesting to know if it was positive in successful cases and negative in unsuccessful ones.

Dr. W. G. HARVEY referred to the difficulty of knowing exactly what protein shock was; he thought the term "non-specific therapy" might be more applicable than "protein shock therapy." He referred to a case of lupus erythematosus which had been particularly resistant to treatment. The patient, while in hospital, had had an attack of rheumatic fever lasting for about three weeks; at the end of this time the lupus erythematosus had cleared up completely and absolutely.

Dr. A. B. CLERY mentioned the case of a man who, before going to France in the war, had had two injections of T.A.B. vaccine. While in France he had contracted trench fever, and had afterwards suffered from very severe pain in the legs, recurring every month or two months, and made much worse after taking even a small amount of alcohol. When seen by Dr. Clery after the war he had had a small varicose vein in his leg, and Dr. Clery sclerosed the vein in order to relieve the pains. The vein disappeared, but the pain still continued. Dr. Clery then gave a third injection of T.A.B. vaccine, subcutaneously; the same evening the patient's temperature had risen to 102°, the next day it was 100°, and the third day normal. Since then the patient had remained perfectly well, and had had no recurrence of the pains.

Dr. SYNGE, replying, said that the reason he preferred T.A.B. vaccine to other forms of protein was because it was a standard preparation; it was therefore easy to decide on the amount which should be given at each injection. In asthma he believed that large doses of peptone had been given to produce shock, but he personally had never tried this, and thought that in this disease it might not be altogether safe. It was unlikely that the small amount of carbolic acid contained in the vaccine could produce haematuria, though the method might be unsafe in patients whose kidneys were bad. He had not investigated the white cell count in his cases. The treatment was unpleasant; many patients after one injection refused to have a second, and some who had had two refused to have a third. If improvement did not occur after the first, or at any rate after the second injection, he thought it meant that the treatment was not going to be successful. If it was an unpleasant treatment it was harmless, and the cures amounted to 20 or 25 per cent., which, in his opinion, rendered it a treatment which was worthy of trial.

Congenital Pyloric Stenosis.

Dr. R. E. STEEN read a paper on congenital pyloric stenosis dealing chiefly with diagnosis and treatment. He emphasized the importance of obtaining a careful history, and concluded that if the diagnosis was not suggested here it would probably be missed at the routine examination. He regarded the association of vomiting and constipation as a syndrome of outstanding value in arousing suspicion; visible peristalsis made the diagnosis extremely probable, but only palpation of the pyloric tumour rendered it certain. He was of the opinion that a tumour could be palpated in every case of pyloric stenosis.

Dr. B. CRICHTON, referring to the large number of cases of congenital pyloric stenosis mentioned by Dr. Steen, said that he thought these figures might be rather misleading, since they gave the impression that pyloric stenosis was a common disease, which he did not think was the case. He had seen only four cases during the last six years, but he had encountered three or four of pyloric spasm. He wondered whether there was now believed to be any connexion between pylorospasm and hypertrophic stenosis. In pyloric stenosis the cardinal symptoms were vomiting, appearance of the tumour, visible peristalsis, and constipation, but last year he had seen a case in which only one symptom had been present—namely, constipation—and this was undoubtedly the most important one. He mentioned the possible value of estimating the gastric contents and of *x* rays in these cases, and said that he thought sometimes such observations might clinch the diagnosis. He believed that in cases where an operation was deemed necessary it should be performed as soon as possible, since waiting lowered the child's strength. He feared that a general practitioner would need great courage to persevere in treating a child medically, since this entailed lavage twice daily; the treatment might be continued for

six or eight weeks, and if by that time there was no improvement, it might be too late to operate. Operation was undoubtedly the treatment of choice in these cases, once the diagnosis was definitely made.

Dr. J. P. SHANLEY referred to the rarity of cases of congenital pyloric stenosis, and said that in Temple Street Hospital there had not been a case for some years. Vomiting was a very common condition in children, even the projectile type, and he thought that this had not been sufficiently recognized. Visible peristalsis was a definite phenomenon, though it also was frequently present in thin babies. The tumour was pathognomonic, if it could be found. It had been reported that out of forty cases a tumour had been discovered in two only; Dr. Shanley wondered if it was justifiable to operate if a tumour could not be found, and said he thought the anaesthetic was the important part of the operation. Although Rammstedt's operation had reduced the mortality, gas and oxygen anaesthesia had diminished it still more. He suggested the advisability of giving a local anaesthetic in these cases.

The PRESIDENT, referring to the rarity of cases of congenital pyloric stenosis, said that during the fifteen years he had been pathologist at the Rotunda Hospital he only remembered having been asked once to perform a *post-mortem* examination on a suspected case of the disease. It had been reported that most of these cases occurred in the first four days of life, and therefore there should be an appreciable number in the first eight days.

NORMALITY OF TEMPERATURE AND PULSE RATE IN GIRLS.

AT a meeting of the Forfarshire Medical Association at University College, Dundee, on December 13th, 1928, with Dr. CHARLES KERR, the vice-president, in the chair, Dr. J. H. P. PATON (St. Andrews) read a paper on observations on the normal temperature and pulse.

Dr. Paton said that as medical officer of a large school for girls he had had special opportunities of observing many individuals in health, and of detecting the symptoms accompanying the onset of disease. From this work one or two facts of some clinical importance had emerged, which might enable one to define more closely than was usually attempted the limits within which the temperature and pulse might be considered normal. His observations had been made exclusively on girls between the ages of 14 and 17, and he did not claim that the results were necessarily applicable to persons of different ages and of the other sex. According to most authorities the normal temperature of the mouth was about 98.4° F., and temperatures below 98° were regarded as subnormal; these standards, he submitted, were inaccurate and misleading. For example, the temperature of convalescents, as found in actual practice, was, according to them, usually subnormal. In the majority of cases, however, the convalescent reading was of the same order as that found in health. He submitted two charts, in both of which the temperature of convalescence was below 98°, and therefore might be considered subnormal but for the fact that it differed in no way from the readings obtained from the same individuals in health. In his experience also the so-called normal temperature of 98.4° was so rare that its occurrence always warranted a suspicion of ill health. On three occasions he had had the morning and evening temperatures of a group of healthy girls recorded for a continuous period of a fortnight. The temperatures were taken orally with thermometers certified by the National Physical Laboratory, and never within half an hour after meals or within an hour of participation in active games. Altogether 108 girls were observed morning and evening, and 3,655 temperature readings were recorded. Only 25 per cent. of the readings were above 98°, and 75 per cent. were subnormal according to the usual standards. He had several reasons for supposing that even these results did not place the ruling temperature sufficiently low. In the first group of girls the records above 98° were about 10 per cent. more frequent than in the two latter groups. At the time of these first observations there was a period of very severe frost, and in the evenings the girls tended to gather round hot fires. That this resulted in some increase in the general level of the temperature seemed probable, for on the coldest night of all more than half of the girls in one house had temperatures of 98.4° or over; all admitted that they had been sitting round the fire in a very hot room. This source of possible error was avoided in later series. Secondly, a study of the charts indicated that many of the occasional readings of 98.4° or over were due to some transient disturbances of health, such as toothache. Thirdly, a few individuals had a habitually high level of temperature, and such an individual record raised the average. The following conclusions could safely be drawn from the records: (1) the normal or ruling temperature of girls aged 14 to 17 years was nearer 97.4° than 98.4°; (2) girls in whom the mean approximated to 98.4° were rare; (3) a temperature of 98.4° in the mouth was so suggestive of illness that it should not be disregarded unless no other disturbance of health could be detected.

The clinical importance of these conclusions, from the point of view especially of the early detection of the exanthemata and other infective diseases, was undoubted. Dr. Paton illustrated this point by charts from cases of measles. He held that a temperature of 98.4° warranted the isolation of a susceptible measles contact, and he had found the advantage of this interpretation of the temperature chart in the prevention and control of epidemics. A slight departure from the subject's usual temperature was by itself of no significance; the state of the pulse was the best guide in estimating the significance of a temperature on the borderline of fever. Two modifications of the heart's action were to be looked for in the young as confirmatory evidence of the pathological significance of a slight rise of temperature; these were increase in rate, and diminution or disappearance of the normal respiratory irregularity (sinus irregularity). Sinus arrhythmia, he was convinced, was invariably present in healthy children. When irregularity of the heart could not be detected upon deep breathing in the horizontal position, it could be assumed with confidence that the child was ill. In some cases the temperature and pulse rate were not disturbed though the irregularity was absent, but he could confidently assert that in these cases other evidence of disturbance of health would be present, if not at once, then in a few hours. He had made several thousand observations on this point, and on no occasion had he found sinus arrhythmia absent in a girl who was in good health. He wished to make it clear, however, that this irregularity did not always disappear in disease; the cause of its disappearance seemed to be some toxic effect upon the sino-auricular node or upon the reflex arcs governing it. When the sinus arrhythmia disappeared in disease it usually reappeared in convalescence, thus affording evidence that the toxaemia which caused its disappearance was at an end. Its reappearance was thus a valuable guide in deciding the stage at which the patient might be allowed to get up. He had found these observations on the temperature and pulse of great service in detecting the early stages of ill health in children. He had made it a rule during the first fourteen days of term, when introduction of infectious disease into the school was most liable to occur, that all temperatures were recorded night and morning, and every record of 98.4° reported at once. If after thorough examination, including observation of the pulse rate and sinus arrhythmia, any other evidence of disturbance of health was found, then the girl was isolated for twenty-four hours. He had succeeded by these means in preventing outbreaks of the exanthemata and in limiting them once they had arisen.

THE CLINICAL PATHOLOGIST AND TOXICOLOGIST IN MEDICAL PRACTICE.

AT a joint meeting of the Manchester Medical Society with the Manchester Pathological Society, at the Manchester University, with Dr. R. W. MARSDEN in the chair, Sir WILLIAM H. WILLCOX gave an address on the role of the clinical pathologist and toxicologist in medical practice.

Sir William Willcox remarked that medical practice to-day owed a very great debt to clinical pathology, biochemistry, and toxicology. It was not too much to say that the enormous advances made in medicine during the

last twenty years were mainly due to the increase in knowledge resulting from researches in these branches. On looking back it was striking to note how recent was the origin of clinical pathology; its foundations were laid by the discovery of the typhoid bacillus by Eberth in 1880, of the tubercle bacillus by Koch in 1882, of the diphtheria bacillus by Klebs in 1883 and by Loeffler in 1884, and of the pneumococcus by Frankel in 1886. For some years after the discovery of these important pathogenic organisms clinical pathology rather confined itself to the finding of the organisms in suspected cases of illness, and remained a branch of medicine more or less separate from clinical medical practice. In 1896 Widal and Durham first applied the agglutination test for the diagnosis of typhoid fever. Since that time a vast amount of study had been made of the reactive phenomena of the body to various specific infections, so that at the present day valuable diagnostic tests existed for a large number of diseases. The studies in immunity had provided medical practice with some of its most valuable therapeutic remedies, such as diphtheria and tetanus antitoxins as types of passive immunization, and the various forms of vaccine therapy, such as typhoid vaccine, whereby active immunity was induced, either for prophylactic purposes or for the treatment of active disease. Refinements in bacteriology had enabled diseases to be differentiated and subdivided. Thus clinical typhoid fever had been subdivided into true typhoid and paratyphoid fever, the organism of the latter being differentiated by Gwyn in 1898. Paratyphoid fever itself had been subdivided into paratyphoid A and B by the work of Schottmüller in 1900; and a further variety, paratyphoid C, had been defined by Hirschfeld in 1919. More recent advances in cultural bacteriology had shown that a number of non-lactose-fermenting organisms of the paratyphoid group existed, which might cause fevers of the enteric type; examples of these were the *Bacillus asiaticus* and *pseudo-asiaticus*, the *Bacillus faecalis alkaligenes* and its pseudo-type, the bacillus of epidemic jaundice, and the *Bacillus morgani*. The term "parenteric organisms" might conveniently be applied to these. These organisms were undoubtedly pathogenic, and their presence could not be overlooked as of no importance. Attention had been called to the prevalence of mixed infections by the paratyphoid group of organisms; thus, a case of typhoid or paratyphoid infection might reveal in the intestine one or more of the parenteric organisms. The Widal agglutination test for paratyphoid A and B, or even for true typhoid, might be affected by the presence of such a parenteric infection. It was well known that this test might on rare occasions be negative throughout a severe attack of true typhoid or paratyphoid fever. In diphtheria the recent discovery of the intradermal Schick test had enabled an existing immunity to be diagnosed and the necessity or not of giving antitoxin to an exposed person to be clearly indicated. In scarlet fever the intradermal Dick test had a similar value. In this disease a valuable aid to diagnosis during the rash period had been provided by the Schultz-Charlton intradermal serum test, where a definite blanching indicated a positive diagnosis. The production of immunity by vaccine or serum therapy in a person suffering from an acute or chronic infection required the closest clinical observation. Sensitization might easily result from incorrect uses of biotherapy, and harm instead of good result. Studies in haematology had proved of the utmost value and guidance in the diagnosis and treatment of various infective conditions. The recent discovery of the value of liver therapy in pernicious anaemia had largely followed haematological studies of this disease, and blood examinations were of great value in indicating the beneficial effects of treatment, and also in the diagnosis of early cases suitable for treatment. Biochemistry had expanded remarkably; chief among the recent advances had been the methods of estimating the function of such organs as the kidney, liver, and pancreas. The treatment and management of cases of renal disease and diabetes were mainly dependent upon the blood estimations for urea and sugar respectively. Toxicology had furnished recent instances of striking advances in knowledge. For example, improved methods of analysis had shown that arsenic might exist in minute amounts normally in the body, and that the urine of a normal person, not exposed to arsenic in any way, might contain up to 0.1 mg. of arsenic in a litre. Similarly, recent researches in America had shown that lead was commonly present in normally healthy persons who had not been exposed to lead in any way. The amounts found corresponded approximately to about 0.07 mg. in a litre. Sir William Willcox urged that at the present time the fullest advantage should be taken of advances in knowledge, and every case be submitted, where possible, to those investigations which might be of value in diagnosis and treatment. The investigations should be in the definite direction of furthering accuracy in diagnosis, unnecessary routine investigations being deprecated. The closest co-operation and consultation between the physician and the clinical pathologist or toxicologist were essential for a proper interpretation of the results. The patient, and not the disease, had to be treated, and therefore the clinical pathologist, in order to achieve success, should not treat cases except in association with a clinical colleague.

RECENT WORK ON ACUTE INFECTIOUS DISEASES.

AT a meeting of the Windsor and District Medical Society on February 20th, Dr. J. D. ROLLESTON read a paper on some recent work on the acute infectious diseases, dealing in particular with chicken-pox, diphtheria, measles, scarlet fever, and vaccinia.

Dr. Rolleston said that as regards the relationship between herpes zoster and varicella, he had until recently been inclined to side with Comby, the principal representative of the dualist school, who regarded the association of the two diseases as a mere coincidence, but his belief had been shaken by the case of a young woman who had had an attack of chicken-pox followed by facial paralysis. On investigating the source of infection he had learnt that a younger sister had had a few spots some weeks before, and examination of the child revealed the typical pigmented scars of chicken-pox on the trunk. Further inquiry elicited the fact that the father had had an attack of cervical herpes zoster about a fortnight before his little girl's eruption appeared. Unlike Trousseau, who said that no physician had ever seen a patient die of the disease, Dr. Rolleston, in the course of twenty-eight years' fever practice, had met with four fatal cases of varicella. Two were examples of the bullous and one of the gangrenous type, while the fourth was complicated by pneumonia in an alcoholic man aged 62. Allusion was made to the prevalence of diphtheria of a malignant type in various European countries, including different parts of Germany—particularly Berlin, the Rhine district, and Breslau—Budapest, Padua, and Barcelona. The malignant character of diphtheria on the Continent was in striking contrast with the generally benign type prevalent in London, where the mortality in 1927 in the Metropolitan Asylums Board hospitals was only 4 per cent., the lowest hitherto recorded in the history of the Board. Dr. Rolleston then discussed some of the aberrant localizations of diphtheria, such as diphtherial whitlow, endometritis, and urethritis, and the present position of prophylaxis and treatment. Dealing with the prophylaxis of measles by injection of convalescent serum, which he described as one of the most important preventive methods in medicine, he said that it was specially indicated in the case of ill-nourished rickety children living in insanitary dwellings, but he did not consider it necessary in hospitals with a hygienic environment or in well-to-do families, since in his experience measles contracted in such surroundings always ran a mild course. He was not in favour of the active immunization of nurses against scarlet fever as he was in the case of similar inoculation against diphtheria. Not only was scarlet fever much less serious, but its incidence among them was naturally much lower than that of diphtheria. He spoke highly of the value of anti-scarlatinal serum, but reserved it for cases of any degree of severity, so that in the course of three years he had employed it in only 320 cases out of over 3,000 scarlet fever patients admitted to his hospital. He had been much impressed by its value in septic cases, provided it was used early. In conclusion, Dr. Rolleston dealt with recent work on the nervous sequels of vaccination.

Reviews.

DISEASES OF THE LIVER, GALL-BLADDER, AND BILE DUCTS.

ROLLESTON'S *Diseases of the Liver* was first published in 1905, and immediately became the leading textbook on the subject in the English language. A second edition appeared in 1912, and now a third has been called for. In the seventeen years which have elapsed since the publication of the last edition an enormous amount of work has been done on all aspects of hepatic physiology and pathology, and it is therefore not surprising that the original author, Sir HUMPHRY ROLLESTON, should have felt it desirable to seek the help of a younger colleague in the arduous task of revision, and he has made the excellent choice of Dr. J. W. MCNEE, who is already so well known for his original investigations in this department of medicine. The book will accordingly, no doubt, be known in future as Rolleston and McNee's *Diseases of the Liver, Gall-bladder, and Bile-ducts*.[1]

Owing to the large amount of new material which has had to be included, the present edition is longer than the last by more than seventy pages, but the number both of coloured plates and of illustrations is less, although many of the latter appear for the first time. Amongst the entirely new matter there come first sections on the anatomy and physiology of the liver, in the latter of which a clear and succinct account of the metabolic and other functions of the organ are given. As the authors point out, some knowledge of the latest work on liver physiology is necessary for the proper understanding of changing conceptions of hepatic and biliary disease. The section on functional diseases of the liver and tests of hepatic function contains a full description of the biochemical and other tests for liver efficiency, but we could have wished for a clearer expression of the authors' views as to the absolute and relative values of the different tests. We notice, too, that in this section, despite its title, there is no account of functional disorders of the liver such as appeared in the last edition; indeed, the term "biliousness" is nowhere mentioned, and has disappeared from the index. The authors may have had some good reason for this omission, but it seems regrettable; and we should have liked also to have heard their views on the possible relation of disordered hepatic function to such conditions as migraine and to the acidosis of childhood. The section on jaundice has been practically rewritten to bring it abreast of present knowledge, and no fuller or clearer account of the varieties and modes of origin of this symptom could be desired. A comparison of it with the corresponding section in the last edition will show how revolutionary the change of view on many aspects of the subject has been. Atophan and its allies, however, are not mentioned among the possible causes of toxic jaundice. Another entirely new chapter describes the radiological diagnosis of diseases of the biliary tract, and deals fully and critically with the new methods available and their diagnostic value. An appendix to the book is devoted chiefly to an excellent description of the van den Bergh reaction, of which Dr. McNee has had so much experience.

These are the sections in which the new edition chiefly differs from its predecessor, but throughout the whole book many minor changes have been made. Weil's disease is definitely identified as spirochaetosis icterohaemorrhagica, of which a very complete description is given embodying all the new work that was done upon this disease during the war and afterwards. Acute yellow atrophy is now spoken of as "acute and subacute necrosis of the liver," and the authors foreshadow other changes in nomenclature which may be necessary before long. They play, indeed, with the idea of reclassifying hepatic disease on the basis of "hepatitis" (a conception for which there is much to be said), but they have wisely decided in this matter to make haste slowly. Meanwhile, this new edition is a monument to the learning, diligence, and clinical experience of the writers, and a credit to British medicine. It is both exact and exhaustive; indeed, if we might venture to say so, it is almost too exhaustive—more than 120 pages, for example, are devoted to portal cirrhosis alone—for the authors have been so careful to do full justice to the work of others, and to leave no facet of the subject unexamined, that it is a little difficult in places to see the wood for the trees, and a less high-power view would have been easier to grasp. As a standard work of reference, however, the book deserves, and will no doubt enjoy, an even greater measure of success than it has had hitherto.

[1] *Diseases of the Liver, Gall-bladder, and Bile-ducts.* By Sir Humphry Rolleston, Bart., K.C.B., M.D., etc., and John William McNee, D.S.O., M.D., etc. Third edition. London: Macmillan and Co., Ltd. 1929. (Med. 8vo, pp. xiii + 884; 87 figures. 42s. net.)

RADIUM TREATMENT OF CANCER.

THE publication of Mr. STANFORD CADE'S important textbook[2] should go far to dispel the illusion that this country still lags behind the Continent in the treatment of cancer by radium. A number of works dealing with individual aspects of radium therapy are available to the English reader; Mr. Cade's book, however, is the first in English to cover the whole subject-matter and to present it from the practical standpoint of the operating surgeon. Whatever the previous convictions of the reader, this book will certainly make him realize that there is much to be said in favour of using radium in the treatment of cancer of certain regions. In particular, the results of radium therapy in carcinoma of the tongue, larynx, breast, and uterus appear to equal if not surpass those procured by surgical methods. The technique now employed in treating carcinoma of the tongue and buccal cavity seems definitely to hold out a better hope of success than any other means. The difficult question of how to deal with the lymphatic glands is admittedly unsettled, though Mr. Cade leans towards a Crile's operation, followed by prolonged irradiation of the neck for two weeks, or in some cases longer, by means of a Columbia paste collar. Whereas formerly the method of choice was to irradiate with large doses for short periods, the tendency to-day, in the treatment of most cancers, is to rely on small doses for very long periods. The results of this modern technique in the treatment of cancer of the breast are already such that the surgeon must seriously consider whether radium therapy does not offer at least as good prospects of cure as Halsted's operation. The gynaecologist also will have to decide whether, in cases of carcinoma of the cervix uteri, radium does not give better results, and with practically no risk, than he may expect to obtain from Wertheim's operation. Time and further work alone can settle these questions, but certainly Mr. Cade, and such workers as Dr. Malcolm Donaldson, make out a very strong case for radium.

At this moment, when so many appeals are being made to the public to buy radium for the hospitals, a technical work, such as Mr. Cade's, will prove of inestimable value, and we cannot recommend too strongly that every surgeon who has hitherto not had the opportunity to employ radium should read this volume very carefully. Although a book, however good, will not of itself give the reader skill in the administration of radium, it will at least put him on the right lines and save him from disaster.

The book is profusely illustrated by coloured plates and drawings, which help to explain the often rather elaborate technique of modern radium therapy.

[2] *Radium Treatment of Cancer.* By Stanford Cade, F.R.C.S. London: J. and A. Churchill. 1929. (Roy. 8vo, pp. viii + 158; 47 figures, 13 plates. 15s.)

ANTE-NATAL CARE.

ANTE-NATAL care now plays so prominent a part in midwifery practice that a book[3] by Dr. W. F. T. HAULTAIN and Dr. E. C. FAHMY, the first devoted solely to this subject to be brought to our notice, is sure of a wide welcome. That it comes from the Edinburgh school, where ante-natal work was started and developed by the late

[3] *Ante-Natal Care.* By W. F. T. Haultain, O.B.E., M.C., M.B.Camb., F.R.C.S.Ed., and E. Chalmers Fahmy, M.B., F.R.C.S.Ed. With a foreword by Professor R. W. Johnstone, C.B.E., M.D., F.R.C.S.Ed. Edinburgh: E. and S. Livingstone. 1929. (Cr. 8vo, pp. xi + 113. 1 plate. 5s. net.)

J. W. Ballantyne, gives it a special claim to our consideration. The book is handy in form, with little more than 100 pages; it must therefore be regarded as an outline of essentials only. The first of twelve chapters gives a short account of the arrangement and working of the Edinburgh Ante-natal Clinic, including reproduction of the case-cards and a photograph of the examination room—all of it valuable to those who may have charge of similar clinics elsewhere. All patients at their second visit are submitted to the Wassermann test; it is admitted, however, in the final chapter that this is not an absolute criterion during pregnancy, and that a negative result cannot be regarded as reliable. Among the chapters specially calling for notice there is one on the examination of the patient in which not only are the methods of diagnosing positions and presentations clearly described, but also the rectifications of posterior positions of the vertex and external version in breech presentations are considered. The chapter on albuminuria, eclampsia, and chronic nephritis is also good, though for a work of this size a disproportionate amount of space seems to be devoted to the treatment of the patient in convulsions. The chapter on pain in pregnancy is useful, and the concluding one on venereal diseases gives an excellent and practical summary of diagnostic and therapeutic methods.

In its obstetrical teaching the book is sound and can be generally recommended. Some readers, however, will feel a little disappointed at the restricted view here given of the ante-natal field, for the authors have presented merely an abstract of those parts of obstetrics which are applicable to their subject, and devote sparing attention to the educational and social aspects. In matter and style the book is rather reminiscent of the formal treatise on midwifery, and for this reason it conveys less than we had hoped of the spirit of ante-natal work. The authors would have done better, we think, if they had given less information about the treatment of eclampsia and placenta praevia, which can be readily obtained elsewhere, and had entered more fully into minor troubles and the fears of the pregnant woman, which pass without notice in textbooks and yet are often difficult to dispel.

DISEASES OF THE BRAIN.

THE section of *Nouveau Traité de Médecine et de Thérapeutique*[4] devoted to brain diseases opens with a chapter of great interest which, under the heading of "*Commotion cerebrale*," describes the effects of physical violence upon the intracranial contents. The writer is insistent that cerebral commotion is not a condition of slight or ingravescent concussion, but may exist independently or in association with this condition. It is marked by symptoms indicating a varying degree of paralysis of all the nervous mechanisms of the brain, begins universally with loss of consciousness and medullary inhibition, and, if not fatal in this stage, gradually progresses through a condition of subcoma, still with completely generalized signs indicative of paresis, to complete recovery, even retrograde amnesia being rare. If any signs are present of localized defects these are due to concomitant contusion. The cerebro-spinal fluid may be under great pressure and albuminous, but is never haemorrhagic or xanthochromic. This condition, he says, is caused by an *ébranlement transmis* in which the skull vibrates as a whole, giving a perfectly generalized shock to its contents. The difficulty of accepting this explanation arises from the fact that the force applied to the skull is always directional—always applied to one aspect—and, however instantaneous, will lead to a distortion of the cranium maximal along the corresponding diameter; and even if the skull could be subjected to a perfectly generalized sudden pressure and release its physical conformation, would lead to a perfectly definite deformation maximal along one plane. Moreover, the rarity of retrograde amnesia in commotion, and its admitted frequence in contusion, alone is a strong argument in favour of our regarding contusion as resulting from a commotion which has been sufficiently severe to result in not immediately recoverable lesions at the places where the yielding has been maximal.

The second chapter deals in a methodical way with the pathology and symptomatology of cerebral haemorrhage, including a valuable description of the *état lacunaire* and basal haemorrhage. The author supports Charcot's claims for one particular branch of the lenticulo-striate artery as the artery of cerebral haemorrhage, although the work of Foix and Hilleman among others has recently discredited this view. Perhaps undue insistence is laid upon the suddenness of onset of the symptoms of cerebral haemorrhage and too little upon the almost invariable prodromal condition, but these defects are amply compensated for by the clear and valuable description of syndromes resulting from haemorrhage into the mid-brain. Cerebral syphilis is described in a chapter to itself as distinct from those on general paralysis and cerebral softening, an arrangement which necessitates much repetition but which is difficult to avoid. All these are clearly and exhaustively dealt with, and their information is fully up to date. There remain for description the chapters on cerebral tumours and cerebral abscess. The usual classification is adopted and the description of the characteristics of each type of neoplasm is clear and complete. The explanations provided for those signs usually held to be indicative of increased intracranial pressure are not clearly separated from those peculiar to the site in which the tumour is found.

This work can hardly be considered a complete and exhaustive examination of the subjects with which it deals, but within the scope provided for discussion the matter is well arranged and clearly set forth.

[4] *Nouveau Traité de Médecine et de Thérapeutique.* Publié sur la direction de MM. P. Carnot et P. Lereboullet. Fascicule XXXII *bis*: Maladies du Cerveau. Paris: J. B. Baillière et Fils. 1928. (6½ × 9½, pp. 356; 65 figures. 50 fr.)

THE FLUORESCENT SCREEN AS AN AID TO TREATMENT OF FRACTURES.

IN a monograph[5] on this subject Dr. RADUTZESCO, a Rumanian who has served as a foreign assistant in the clinic of Professor Pierre Duval in Paris, describes the systematic diagnosis and treatment of fractures of the wrist and ankle with the help of *x* rays and the fluorescent screen, and illustrates his work with a number of reproductions of *x*-ray plates. He describes the "radioscopic shovel" of Dr. Henri Béclère. (It would have been better to call a spade a spade, for this appliance is far more like a spade than a shovel.) The precautions necessary to protect the surgeon and his assistants from the effects of the rays are also described. The screen should be covered with lead glass at least 10 mm. thick. The other precautions are those now usual with *x*-ray workers. The plaster splints of Hennequin, Delbet, and Quénu are described and recommended, and eleven cases of fracture of the lower ends of the forearm and leg bones, and one of the middle of the shaft of the humerus, are very fully described and illustrated by 33 plates, the figures showing the conditions before, soon after, and weeks after the injuries. The author sums up the results of his experience in a number of "Conclusions," which are rendered in five languages besides the original French. The effort of the translator into English is not altogether successful. "Intervention sanglante" is not adequately rendered by "fleshy operations," and in another paragraph the author's meaning is badly distorted.

We think this is likely to be a useful work, although it seems almost a counsel of perfection to suggest that such elaborate proceedings should be made the routine for a class of cases that are adequately treated generally by the ordinary use of *x* rays, provided that the surgeon is experienced and instructed in sound principles. In a hospital treating many fractures it would be difficult to spare the time and space necessary for all these radiographs and screenings. There is a table of contents, but no index to this book.

[5] *La Réduction des Fractures sous l'Écran Radioscopique.* Par Dr. Radutzesco. Préface de M. Pierre Duval. Paris: Masson et Cie. 1928. (Med. 8vo, pp. 196; 125 figures, 48 plates. 50 fr. sans majoration.)

NOTES ON BOOKS.

No. 2 of the Memoir Series of the London School of Hygiene and Tropical Medicine contains an account of researches conducted during 1924 and 1925 in Polynesia and Melanesia[6] by Dr. PATRICK A. BUXTON. These have reference principally to filariasis, but notes are appended on other diseases occurring in Samoa and other archipelagos, more especially on yaws, Samoan conjunctivitis, and helminthiasis; a chapter is added on the customs of the Samoans of a hundred years ago, and of the foreign influences which have affected them, and their results. In the examination of cases of filariasis the author considers that the presence or absence of six physical signs should be regularly recorded—namely, enlargement of the superior inguinal glands, the inferior inguinal glands and the epitrochlear glands, the enlargement or fibrosis of the epididymis or testis, and the presence of hydrocele. Enlargement of the epitrochlear gland is the commonest physical sign of filariasis; it is that most closely correlated with the presence of micro-filaria in the blood, and will not improbably be used in Oceania in the same way that spleen rate is used by the malariologist. It is, however, rare in some regions, and cannot, therefore, be of general utility throughout the tropics. Hydroceles are common in Oceania; they are mostly bilateral, and generally caused by filariasis, though whether due to blocking of lymphatics, to the production of a toxin, or to secondary infection is not clear. With regard to elephantiasis, assuming that the filaria is an essential antecedent to its development, the exact position of the parasite as an etiological agent is still obscure; whether it is an immediate cause or an adjuvant is not known, and owing to the impossibility of obtaining *post-mortem* examinations the pathology of elephantiasis could not be studied in Oceania. With regard to the vector of the non-periodic filaria in Fiji and Polynesia there seems to be little doubt that it is *Aëdes variegatus*. Myositis, suppurative and non-suppurative, which has generally been regarded as due to filaria, was studied in thirty-two cases; the author concludes that it is a staphylococcal pyaemia of unknown origin, characteristic of the damp tropics. The volume is illustrated with many excellent photographic plates.

When we reviewed the fourth edition of Professor C. P. EMERSON'S *Essentials of Medicine* (June 11th, 1921, p. 858) we commended it as a clearly written book for nurses and for students beginning a medical course. In the eighth and considerably revised and enlarged edition,[7] recently issued, the author, by eliminating from his account all that is accidental, rare, or disputed, once more succeeds in presenting in an interesting manner the general outline of clinical medicine, leaving it to the student as he grows in knowledge and experience to fill in the details.

The *Minutes of the General Medical Council and of its Various Committees*[8] for the year 1928 have now been issued, with seventeen appendixes, in a volume which includes the customary reports of the two sessions of the General Medical Council and of its Executive Committee, of the meetings of the English, Scottish, and Irish Branch Councils, and of the Dental Executive Committee. The appendixes comprise memorandums on the training of medical practitioners and midwives, reports of the Education, Dental Education and Examination, Public Health, Pharmacopoeia, and Examination Committees. The *General Index* to the Minutes of the General Medical Council and of its Executive and Dental Executive Committees, and of its three Branch Councils from 1903 to 1928, and relating to volumes xl to lxv, also just issued, follows the plan of the previous issue in grouping the references under each head in chronological order, in indexing each subject under two or more headings, and in supplying a sufficient number of cross references.

The British Journal Photographic Almanac[9] for 1929 should be welcomed by photographers of all types, from the amateur "dabbler" to the trained professional. The editor, Mr. GEORGE E. BROWN, contributes an interesting article on the use of the camera in the detection of crime, and Mr. T. J. L. Bentley deals exhaustively with action photographs and their making. The volume includes a series of excellent reproductions of fine photographs from many parts of the world. Recent developments in photography are fully discussed.

[6] *Researches in Polynesia and Melanesia.* Parts V–VII (Relating to Human Diseases and Welfare). By Patrick A. Buxton, M.R.C.S., D.T.M. and H. No. 2 of the Memoir Series of the London School of Hygiene and Tropical Medicine, published by the School in November, 1928. (Cr. 4to, pp. xi + 139; 27 plates, 6 figures. 9s.)

[7] *Essentials of Medicine.* By Charles Phillips Emerson, M.D.; Nellie Gates Brown, R.N., assisting in the revision of this eighth edition. London: J. B. Lippincott Company. 1928. (5¼ × 8¼, pp. vii + 588; 164 figures. 12s. 6d. net.)

[8] *Minutes*, 12s.; *Index to Minutes*, 7s. 6d. London: Constable and Co., Ltd. 1929.

[9] *The British Journal Photographic Almanac, 1929.* Edited by George E. Brown, F.I.C. London: H. Greenwood and Co., Ltd. 1929. (4¾ × 7¼, pp. 798; illustrated. 2s. net.)

Volume xxii of the *Transactions of the Medico-Legal Society*[10] covers the proceedings of that body during the session 1927–28. Among the papers is one by Professor Louise McIlroy on "Influence of parturition upon insanity and crime," which provoked an interesting discussion on the medico-legal aspects of infanticide. Drunkenness was the subject of two communications, one relating to "pathological drunkenness" as a defence of insanity at a murder trial, and the other discussing drunkenness and civil and criminal responsibility. The papers by Dr. Gerald Slot on "Pain in its medico-legal aspects," and by Dr. John Glaister, jun., on "Hair—considered medico-legally," should also be mentioned.

Dr. R. FORTESCUE FOX'S *British Spas and Climatic Health Resorts, 1929*,[11] which is incorporated in the *Medical Directory*, has been published separately in pamphlet form. In addition to notes on the choice of waters, sea bathing, etc., detailed information is given about all the principal health centres in Great Britain, and also certain New Zealand spas.

[10] *Transactions of the Medico-Legal Society, 1927–28.* Jointly edited by Gerald M. Slot, M.D., M.R.C.P., and Everard Dickson, barrister-at-law. Vol. xxii. Cambridge: W. Heffer and Sons, Ltd. 1928. (Demy 8vo, pp. xxv + 130. 12s. 6d. net.)

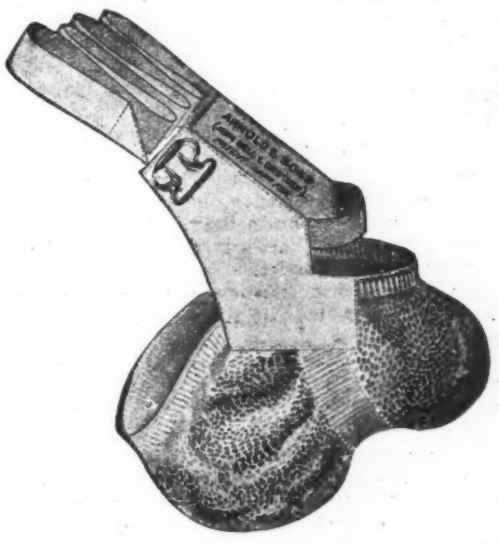
[11] *A Guide to British Spas and Climatic Health Resorts, 1929.* London: J. and A. Churchill. 1929. (6 × 9¾, pp. 108; illustrated. 1s. net.)

PREPARATIONS AND APPLIANCES.

A SUSPENSORY BANDAGE FOR USE IN GONORRHOEA.

DR. A. GARDNER (R.M.S. *Empress of Scotland*) writes: In the treatment of gonorrhoea in the male, I have found the following suspensory bandage much appreciated by patients as a comfortable support, and as a convenient and cleanly means of holding dressings in position.

The bandage differs from the ordinary suspensory bandage in having a separate pouch for the penis in addition to the usual support for the testicles. This pouch is suspended from the pubic attachment of the bandage, and is provided with an adequate elastic-bound opening at the root of the penis, whereby the latter can be withdrawn for the purpose of micturition or changing of dressings. To ensure that the dressings will be securely held in position within the pouch and to enable them to be handled without risk of the fingers coming into contact with discharge, it is essential that they be large enough to envelop



the entire organ. I find the following procedure effective. A piece of lint or wool about five inches broad and seven inches long is covered externally by a piece of waterproof tissue large enough to overlap by nearly an inch all round, and the double layer is folded lengthwise over the penis. On turning the edges inwards over the dorsum and inserting within the pouch, the walls of the latter grasp the enveloped organ sufficiently firmly to give a comfortable feeling of support and to prevent displacement of the coverings. During withdrawal the penis is kept fully covered until clear of the pouch.

The advantages of the bandage are: (1) Micturition and redressing can be performed by the patient without his having to undo any tapes, and with no more exposure of the parts than would be required in normal circumstances. (2) Dressings are held securely in position day and night and can be changed without risk of soiling the fingers. (3) The support given to the penis adds to the patient's comfort in the acute stage and may help to prevent the development of epididymitis. (4) The isolation of the infective area within the bandage gives an effect of tidiness that assists the patient mentally.

The bandage is manufactured by Arnold and Sons (John Bell and Croyden), 50–52, Wigmore Street, W.1.

Nova et Vetera.

HERRINGS AS FOOD AND PHYSIC.

THE announcement in the press that an "eat more fish" campaign is to be inaugurated by those interested in the catching and marketing of fish recalls a similar attempt made 150 years ago. By the middle of the eighteenth century fishing on the east coast had fallen into a parlous condition. It had been decaying gradually for a hundred years previously. Invaded by foreigners, chiefly Dutch, with larger boats and better gear, the all-important herring fishery had ceased to be one of the great sources of English wealth. The frequent wars with Holland were due in large part to the difficulties and jealousies arising out of the herring industry. In the year 1748 a serious attempt was made to revive the fishery, which could be done only by the provision of a large sum of money to subsidize the building and equipment of suitable boats. A bill was accordingly passed by Parliament announcing (1) that as the fishery was of great advantage to the trade and navigation of the kingdom all possible impediments to it should be removed; (2) that a bounty of 30s. per ton was to be paid to all new vessels between twenty and eighty tons suitable for, and employed in, the fishery; and (3) that a Company of Adventurers be formed with power to raise a capital sum of £500,000, interest at the rate of £3 10s. a year being guaranteed to the proprietors for a period of fourteen years. At a meeting held in the City the names of a number of gentlemen were proposed to the Crown for nomination as officers in the Charter. In addition, certain local committees were formed at outports subscribing the sum of £10,000. The Prince of Wales consented to be the Governor of the Company.

It is probable that the appeal for money did not meet with a satisfactory response, for a need appears to have arisen for an "eat more fish" campaign. In the year 1752 a surgeon named James Solas Dodd published a book of 175 pages, designed to arouse public enthusiasm in favour of herring as food and physic. The book opens with an introductory bibliography of the fish from ancient times, showing the esteem in which it had been held from the reign of Philip of Macedon onwards. There follows an exhaustive account of the natural history of the fish, with the fullest anatomical details, these being supplemented by an account of their migration and the methods of catching and curing them for the market. Then, however, comes the real purpose of the book, to discuss the "cold temperament" of the herring, and its freedom from harmful "heating" qualities.

From the author's numerous recipes for the preparation of the herring as food we cite the following.

To Stew Herrings.

When your herrings are scaled, washed and the fins cut off, put them in a stewpan, with no liquor, but a quarter of a pint of white wine, some mace, whole pepper and salt. When they are half stewed, put in some thick cream, and a little piece of butter dipped in flour; when that is melted, put in some oysters with their liquor; keep them often shaken till the fish and oysters are enough, or that the oysters will break; squeeze in a little lemon, give them a scald, and pour them into a dish.

To Roast a Brace of Herrings.

Take two very large herrings washed very clean, strew a little salt, hang them on the spits of a tin-oven. Throw away all the water that comes from them for the first half-hour; then throw on a little nutmeg, mace and cloves, beat fine, and a little salt; flour and baste with butter and crumbs of bread. When one side is done turn the other. Then have ready some anchovy and melted butter, some of the liver of the fish boiled and bruised fine; mix it well with some butter and two yolks of eggs, strain through a sieve, and put them into a saucepan again with a few shrimps, or pickled oysters, the juice of a lemon, and a little red wine. Put it into the pan that you put your herrings in, and stir all together; then pour it again into the saucepan, keep it stirring, let it boil, and then serve it up, garnished with pickled barberries.

A Fricasse of Roes.

Take a quantity of soft roes blanch'd, cut them into dice; put a lump of butter in a stew-pan, and toss it up with an onion cut small. After that put in your dice, and give them two or three tosses; this done, put a little flour over them, moisten them with a little fish broth, season with salt, pepper, sweet herbs, and fine spice, and let them stew gently. Being done, thicken it with yolks of eggs, parsley cut small, and a dash of vinegar, served up hot.

Note that pickled roes will do as well steeped in water to unsalt them, and omitting salt in the seasoning.

Not content with the use of herrings as food the author proceeds to consider their medicinal value. He quotes Dr. Fuller on feet cataplasms, and supplies an explanation of how these act. Herring cataplasms fall into the acrid and stimulating category, being indicated when the spirits are oppressed, stupid, and sluggish, as in soporose cases. Here is one of his prescriptions:

A Cataplasm of Herring.

Take white briony root new digged up (or if it be dried, then the powder of it) two ounces; black soap three ounces, pickled herrings (or anchovies) four ounces; salt one ounce and a half; and mix. It is to be bound to the soles of the feet, and changed every twelve hours, and is chiefly used where the febrile matter assaulting the head, and oppressing the spirits, causes a stupor or sleepiness.

Various authors are quoted who recommend salt herrings as a remedy for plague; herring, dried and powdered, is alleged to open obstruction of the urinary passages; the ashes of burnt herrings serve as a lithotriptic; used in clysters the herring is held to be a remedy in sciaticas and dropsies. The oil is excellent in the treatment of cramps and convulsive contractions, while an elixir of the bones operates in febrifick cases by stimulating sweat and urine.

Here are a few of the prescriptions in which herrings are used, with the diseases to which they are appropriate:

Extract of Herrings.

Take six pounds of fresh herrings, four ounces of salt of tartar, and put into a matrass, and pour on six pints of rectified spirits of wine; let it stand in infusion in a bath heat for four days, then decant, and pour on six pints more, and let it infuse till it will give no more tincture. Put these tinctures together and filter them, and exhale the humidity in a sand heat, till the matter be left at the bottom the thickness of honey. Half a scruple of this taken for a dose in the form of a bolus is of great service in all urinary obstructions, and joined to other deobstruents may be of great utility in other obstructions.

A Cleansing Ointment of Herrings.

Take fresh herring twelve pounds, oil of olives the same quantity, boil three hours and strain off. Then add gum euphorbium, powder of white hellebore, each four ounces. Gum olibanum, gum sarcocol, and gum elimi, each half a pound; yellow wax, two pounds. Melt and make an ointment.

This is a medicine of great service in the itch and all cutaneous eruptions, and may be conveniently joined with an eighth part of mercury; allay'd with turpentine for leprosies, being warily used.

Essence of Herrings.

Take twenty soft roed herrings, cut them in pieces, and put into a cucurbite with a quart of spirits of wine, and eight ounces of white wine. Let them digest in horsedung for six weeks, and pour off and filter for use.

This is a diuretic, and may be taken to the quantity of thirty drops in a proper vehicle.

A very long recipe describes how herrings can be distilled "after the manner of vipers," the results being (1) a volatile salt which is a high sudorifick and deobstruent, of excellent service in malignant fevers and very prevalent in epileptic cases, (2) a fetid oil to be applied to contracted sinews, and (3) a spirit with the same virtues as the salt.

Various parts of the fish have their several uses: The gills burnt to powder are accounted a specifick in, and a preservative from epilepsies. One that was troubled with a fistula at the lower orifice of the stomach, was cured by swallowing every morning for a month, a herring's heart. The liver dried to powder, and mixt with honey is a present cure for toothache. The gall mixt with honey and taken cures dysentery. The spawn put in a linen cloth and applied, is excellent in the piles. The soft roe distill'd produceth a water exceeding frog's spawn water for a cooling cosmetick, is good in burnings, redness in the face, and eruptions of the body. The oil of the roes is good for deafness, mixt with eels gall and dropped into the ear.

Perhaps the most curious of all the nostrums quoted is that in which herrings assist in the preparation of a general anaesthetic.

Take the oil pressed out of fresh herrings, a pint, a boar's gall, juices of henbane, hemlock, aifel (that is, the little house leek) lettuce and wild cat-mint, each six ounces, mix them together, and boil them well, and put them into a glass vessel well stopt. Then take three spoonfuls of the above and put into a quart of warm ale and let the person who is to undergo any operation sit before a large fire, and drink of this by an ounce at a time, till he falls asleep, which sleep will continue during the space of three or four hours; and all that time he will be insensible of any thing done to him.

The author is a little shy of this prescription and rather doubts whether it would render a man entirely insensible to pain, and gives an amended version of his own as a hypnotic, a drachm to be rubbed into the pulses of the wrist to procure sleep.

The work concludes by an appeal to people to invest in a scheme, which is no South Sea bubble, but guaranteed by the State. Therefore under such appearances of success let no one fear a loss, but cheerfully contribute to the raising of this undertaking to the acme of perfection; then we shall rejoice and sing; then again the entire balance of power will be in British hands, and then we may sit down each man under his own vine and his own fig tree, and fear no invader, since after that period should any be so daring as to shock our peace, we could draw from our busses a train of hardy veterans, true British seamen, who alone could guard that island they support.

MARK R. TAYLOR, M.R.C.S., L.R.C.P.

CONGENITAL DISLOCATION OF THE HIP.

LECTURE BY MR. H. A. T. FAIRBANK.

ON the afternoon of February 28th, in the Medical Building of the University of Liverpool, Mr. H. A. T. FAIRBANK delivered the Lady Jones Lecture in orthopaedic surgery, his subject being congenital dislocation of the hip, with special reference to its anatomy.

Changes in the Acetabulum.

Mr. Fairbank began by describing the anatomy of the dislocated hip, basing his description on a study of 35 museum specimens, 50 open operations, and the literature of the subject. The primary anatomical fault, he said, was deficient growth of the upper acetabular margin, to which all other changes were secondary. The malformation involved the cotyloid ligament, the cartilage, and the bone. Before many years the acetabulum became triangular, with the apex upwards and backwards; the margins were fairly straight, sharp, and even undercut. In dry specimens the socket was surprisingly deep, but the floor was flat; in the fresh state it was largely filled by cartilage and fibro-fatty material. The ilium presented a wavy anterior margin, with a deep notch for the psoas tendon. A false acetabulum, which might be a shallow pond considerably larger than the femoral head, and suggestive of decided mobility of the latter in all directions, was usually seen on the dorsum ilii. The floor might present flat-topped bosses with the margin raised, even to the extent of forming a deep cup with an eburnated surface, resembling, in fact, a typical osteo-arthritic socket. In a bilateral case these changes might occur on one side only. A raised hollow facet might represent the false joint. The surface of the bone behind the true acetabulum was usually modified; owing to the increased strain thrown on this region of the bone by the capsule, it might be markedly roughened or thickened to form a rough ridge; or it might present a facet, usually single, corresponding to a similar facet on the lesser trochanter. This facet, which lay within the joint cavity, with the capsule attached to its posterior margin, might overlap the acetabulum to a considerable extent.

The False Joint.

The head of the femur was usually small, and it might be wedge-shaped, conical, mushroomed, eroded and lipped, or largely worn away. The angle of the neck was usually normal, though coxa vara and coxa valga sometimes occurred. Ante-torsion of the head and neck was usually present, but rarely extreme. The neck might present a polished facet, more commonly in front, the result of friction against the capsular sling. The lesser trochanter in adults might be well formed as in children, hardly be visible, or be capped by a facet with a lipped margin. The capsule was stretched upwards by the head, and the cavity became hour-glass shaped, with an isthmus in the middle, which was accentuated by the psoas tendon which crosses it. In the floor of the false joint the capsule blended with the periosteum and became fibro-cartilaginous; it was much thickened in front and below, and particularly behind. The ischio-capsular band, which was very strong, arched over the neck to join the fibres from the front of the acetabulum, thus forming a *capsular sling*. The ligamentum teres was often absent in older cases and after forcible treatment; very rarely it interfered with complete reduction. The joint cavity always extended backwards over the ischium, a vertical fold of the synovial membrane sometimes marking the separation of this posterior extension from the true acetabular portion. Also present in some cases, and situated just above the upper margin of the joint, was a horizontal fold which piled up on the upper margin if the femur was pulled down as, for example, in attempted reduction. In adult specimens this fold might be prominent, the isthmus being displaced outwards towards the femur. It partly, and even completely in some cases, separated the upper portion of the cavity containing the head from the other two below.

Action of Muscles.

Of the muscles, the adductors, hamstrings, and rectus were short, but only the first interfered with reduction. The sciatic nerve was short, but could be relaxed by flexion of the knee. Injury to this nerve during reduction was due to bruising rather than stretching. The psoas tendon passed horizontally backwards and outwards to the femur, and acted as a sling supporting the pelvis. The glutei were not much shortened, but they were weak on account of the reduction of their area of origin. They abducted the femur and held it to the pelvis. The obturators and associated muscles ran obliquely upwards to the femur, and acted as important slings for the pelvis.

The pelvis, said the lecturer, was therefore supported on the femur by the thickened bands in front, but particularly by the "capsular sling" over the neck, assisted by the psoas in front and the obturator group of muscles behind. The characteristic gait was due to the weak abductor muscles acting at a mechanical disadvantage, since the levers, formed on the one hand by the head and neck, and on the other by the ilium, were shortened, while the distance from the head to the midline, in which the body weight acted, was increased. Other possible factors were the antero-posterior instability of the head and the adductor action of the obliquely running obturators which must contract to support the pelvis. Furthermore, the weak abductors (glutei) not only acted at a mechanical disadvantage, but had to resist the adductor pull of the obturators.

Pain and increasing disability in adolescence or adult life might be due to muscle strain, but if severe they were due to arthritis. Arthritis might be infective in origin or a typical osteo-arthritis; a villous arthritis had been described. The prognosis of the untreated case was not hopeless, and many patients reached middle life without serious disability.

Treatment.

In treating a case, said the lecturer, two objects had to be kept in mind—namely, to cure the limp by providing a stable joint and to diminish the chances of arthritis. Both objects were best served by early reduction, preferably when the patient was between 18 months and 2 years of age. Permanent cure at this age, and even up to 3 years, meant, in the majority of cases, a practically normal hip. In older cases a cure could still be effected, though often without realizing the second object, the reduced hip being far from normal. During manipulative treatment, after apparent reduction, further leverage movements were necessary to get the head well home. There was a growing tendency in the United States, and to some extent in this country, to resort to open reduction as a routine. This procedure, though useful in old patients in whom the hips could not be reduced by manipulation, was, in Mr. Fairbank's view, to be condemned as a routine, on the grounds that it had no advantage over the simpler manipulative methods, by means of which, in the great majority of young patients, true reduction could be obtained. Ante-version was not a common cause of relapse, and its correction by osteotomy was rarely necessary. Failure of the upper lip of the socket to grow out was *the* cause of relapse.

Operative Procedures.

The advisability of attempting reduction after the age of 9 for a unilateral, and of 6 for a bilateral case, was very doubtful; the anatomical results were so bad that permanent benefit, even though reduction were obtained, was questionable. Hey Groves's method of transferring the head, enclosed in its capsular dome, to the acetabulum, which was gouged out to receive it, had no advantage over reduction coupled with a bone-grafting operation to make an upper lip. The making of an upper lip was a most useful operation when relapse was imminent after manipulative reduction, or when the latter, as in the case of a patient 4 years or older with a subluxated hip, held out little hope of cure. "Anterior transposition" by manipulation (that is, transposing the head to the region of the anterior inferior spine) when reduction was impossible, though difficult to achieve, was favoured by some surgeons. Adduction and flexion deformity were more satisfactorily corrected by osteotomy. Finally, the difficult problem of the irreducible adolescent or adult case suffering from pain and increasing disability had to be considered. Arthrodesis was the only operation which could afford permanent relief, and in unilateral cases it was the operation of choice. Osteotomy might be suitable for the adolescent with moderate pain and no *x*-ray signs of arthritis, and it probably mattered little which method of osteotomy was used; opinions differed as to the value of this operation, and its mechanical and anatomical results called for careful consideration. The shelf operation—that is, the turning down of a bone flap or fixing a graft above the head, pulled down towards, but not to, the acetabulum—might increase the stability, but could not be expected to relieve arthritic pain for long. In a bilateral case it might be the only possible procedure when the other hip had been ankylosed. Mr. Fairbank condemned simple excision of the head. By this operation the pain, though at first relieved, soon returned, and the limp was much exaggerated.

ROYAL MEDICAL BENEVOLENT FUND.

SUBSCRIPTIONS are very urgently needed to enable the Committee to meet the many calls for financial help which are made by those members of the medical profession, their widows, and dependants who are afflicted by poverty and want, more especially at this time of year, when poverty is made the harder to bear owing to illness and bodily suffering. Every reader who is not already a regular subscriber is urged to consider whether one guinea at least could not be given in response to this appeal. Subscriptions and donations should be sent to the Honorary Treasurer, Royal Medical Benevolent Fund, 11, Chandos Street, Cavendish Square, London, W.1.

At the last meeting of the Case Committee forty applications were considered and thirty-six grants were voted, amounting to £744 3s. The following is a summary of four cases.

Daughter, aged 46, of M.D. Left penniless on the death of her father, and, in spite of delicate health, trained as a nurse; she broke down badly after working at a hospital during the war. She attempted to resume work later, but in the end was forced to give up. She is now suffering from tuberculosis. There is no relation who can help. The Fund voted £36 towards the sanatorium fees, and with this as a start a friend who knows and admires this lady's uphill fight throughout her life is endeavouring to raise a special fund so that treatment in the sanatorium can be continued.

Daughter, aged 25, of L.R.C.P. Is suffering from tuberculosis and every hope is held out of a cure by immediate treatment. The applicant, however, has no private means to enable her to do this. Fund voted £25, and with the co-operation of the Guild enough money has been raised for one year's treatment.

Widow, aged 57, of M.R.C.S. Her husband died in 1929, having been a lunatic for the last years of his life. During these years his wife had had to attend her husband, and on his death such little income they had, amounting to £117 per annum, ceased. Her brother is able to contribute £26 per annum. Being an energetic and capable woman it is hoped that after she has had time to recover her health, which has been badly broken by all she has had to suffer, she will be able to find work and fend for herself. To give her the necessary rest and opportunity to find work the Fund voted £28 towards her maintenance.

Widow, aged 60, of M.B. Her husband died in November, 1928. After everything is settled and debts are paid the income which she may hope to receive from her husband's estate will be 15s. a week. Voted £30 in four instalments. Her total income will then be only £69 a year, but she hopes she may find some lodgers to take into her home and thus augment her income.

The Royal Medical Benevolent Fund Guild still receives many applications for clothing, especially for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles. The gifts should be sent to the Secretary of the Guild, 58, Great Marlborough Street, W.1.

NEW YEAR HONOURS.

THE list of New Year honours, which has been delayed owing to the illness of the King, was issued as a special Supplement to the *London Gazette* on March 1st. The names of the following members of the medical profession are included.

Baron.

Sir BERKELEY G. A. MOYNIHAN, Bart., K.C.M.G., C.B., M.S., LL.D., D.Sc., President of the Royal College of Surgeons of England, Consulting Surgeon to the Leeds General Infirmary.

Companion of Honour.

FLORENCE ELIZABETH, LADY BARRETT, C.B.E., M.D., M.S., B.Sc., Dean of the London School of Medicine for Women, President of the Medical Women's International Association.

K.B.E. (Civil).

CHARLES HUBERT BOND, C.B.E., D.Sc., M.D., F.R.C.P., LL.B., Commissioner, Board of Control.

D.B.E. (Civil).

Miss ANNE LOUISE MCILROY, O.B.E., M.D., D.Sc., Professor of Obstetrics and Gynaecology, Royal Free Hospital School of Medicine for Women, University of London; President, Maternity and Child Welfare Group of the Medical Officers of Health.

Knighthood.

KHAN BAHADUR NASARVANJI HORMASJI CHOKSY, C.I.E., medical practitioner, Bombay.

CARRICK HEY ROBERTSON, M.B., F.R.C.S., F.A.C.S.(Hon.), Surgeon to the Auckland Hospital, New Zealand.

C.B. (Civil).

Sir WALTER MORLEY FLETCHER, K.B.E., M.D., D.Sc., F.R.S., Secretary of the Medical Research Council.

C.M.G.

JOHN HOWARD LIDGETT CUMPSTON, M.D., Director-General of Health and Director of Quarantine, Commonwealth of Australia.

FRANK COLE MADDEN, O.B.E., M.D., F.R.C.S., Dean of the Faculty of Medicine, Egyptian University, Cairo.

ARTHUR JOHN RUSHTON O'BRIEN, *M.C.*, M.B., Surgeon Specialist and in charge of the Gold Coast Hospital, Gold Coast.

AMBROSE THOMAS STANTON, M.D., Chief Medical Adviser to the Secretary of State for the Colonies.

C.I.E.

Lieut.-Colonel CHARLES ISHERWOOD BRIERLEY, I.M.S., Chief Medical Officer and Inspector-General of Jails, North-West Frontier Province.

Lieut.-Colonel ROBERT ERNEST WRIGHT, I.M.S., Professor of Ophthalmology, Medical College; Superintendent, Ophthalmic Hospital; and Medical Officer, Civil Orphan Asylums, Madras.

Lieut.-Colonel HAROLD HOLKAR BROOME, I.M.S., Principal and Professor of Surgery, King Edward Medical College, Lahore.

HENRY TRISTRAM HOLLAND, M.B., Ch.B., F.R.C.S.Ed., Medical Missionary, Baluchistan.

C.B.E. (Civil).

Miss MARY HANNAH FRANCES IVENS, M.B., M.S., Ch.M., Clinical Lecturer in Obstetrics and Gynaecology, University of Liverpool.

Lieut.-Colonel JOHN KENNETH SPROT FLEMING, O.B.E., Deputy Director-General, I.M.S.

O.B.E. (Civil).

NORMAN PARSONS JEWELL, *M.C.*, M.D., Resident Surgical Officer, European Hospital, Nairobi, Kenya.

JOHN CRICHTON STUART MCDOUALL, M.R.C.S., L.R.C.P., Director of Medical and Sanitary Services, Sierra Leone.

M.B.E. (Civil).

Miss ISABELLA HARDIE CURR, L.R.C.P., L.R.C.S., in charge of the McLeod Hospital for Women at Inuvil, near Jaffna, Island of Ceylon.

Kaisar-i-Hind Medal (First Class).

Mrs. PEARL SMITH CHUTE, Lady Doctor in charge of Canadian Baptist Mission Hospital, Akidu, West Godavari District, Madras.

JOHN HUTCHISON, L.R.C.P. and S.Ed., Church of Scotland Mission, Chamba State, Punjab.

NOWROJI JAMSHEDJI BANDORAWALA, Principal Medical Officer, Bikaner State.

Two other New Year Honours will be especially welcomed by members of the medical profession, with whom the recipients have long had very close association. Sir ARTHUR ROBINSON, K.C.B., Permanent Secretary, Ministry of Health, has been promoted to be G.C.B., and Miss WINIFRED CLARE CULLIS, O.B.E., M.A., D.Sc., Professor of Physiology, London (Royal Free Hospital) School of Medicine for Women, has been promoted to be C.B.E.

British Medical Journal.

SATURDAY, MARCH 9TH, 1929.

SECURITY OF TENURE IN PUBLIC POSTS.

A RECENT decision by Mr. Justice McCardie in the King's Bench Division, in the action Brown *v.* Dagenham Urban District Council, must have caused surprise and, indeed, consternation in the minds not only of members of the various public services, but of the average man, who has an idea that English law is the crystallization of common sense and of the universal desire for fair play. Throughout the long struggle for constitutional liberty in this country no right has been guarded more jealously than the fundamental principle that no man shall be condemned behind his back. Only a few weeks ago we had, in the Salvation Army case, an example of the importance the judicature attaches to the exact observance of this principle. The result of the Dagenham case seems to show that local authorities, in virtue of the extraordinary powers given to them by various Local Government Acts, may safely ignore this principle. The plaintiff in this action sought to recover damages, for alleged wrongful dismissal, from the urban district council, under whom he served as assistant overseer and clerk, and the case thus, incidentally, raised a question affecting the security of tenure of office for all local public officials, including medical members of the public health services. The question, his Lordship said in delivering judgement, was whether Section 189 of the Public Health Act, 1875, conferred on district councils a power of dismissal similar to that possessed by the Crown—a power of dismissal which could not be negatived or impaired by any contract of service. "The position created by the section is remarkable. I conclude that the council could dismiss its clerk, at pleasure, whatever might be the contract between them." The plaintiff's claim for wrongful dismissal, and his application for a declaration that he had not been dismissed from his office, therefore failed.

Complaint was made during the course of the action that the defendant council had given the plaintiff no opportunity of stating his case before they dismissed him from office. That, said his Lordship, was regrettable; but no right of hearing before dismissal was given by Section 5 of the Local Government Act, 1894, or by any other Act; and the plaintiff was not therefore entitled to a hearing. This is an amazing doctrine, but we suppose that we must take it as being law unless it is upset on appeal to a higher court. In these circumstances it seems to be beyond question that most officers appointed under the Public Health Acts can be dismissed at any time at the pleasure of the council under which they hold office, irrespective of any contract made between the council and the officer as to notice of termination of appointment. While Mr. Justice McCardie's decision in this case is based on Section 189 of the Public Health Act of 1875, it appears that similar powers are held by municipal corporations under the Municipal Corporations Act, 1882, and by county councils also, seeing that the provisions of the 1882 Act which relate to appointments and dismissals (Sections 17 and 19) are incorporated in the Local Government Act, 1888, which brought county councils into being.

County medical officers, and, indeed, most medical officers of health, have some protection owing to the fact that the consent of the Minister of Health has to be obtained before such appointments can be terminated by the local authority. But the fact remains that medical officers of health constitute only a small proportion of the whole number of medical officers in the local government service, and it seems clear that assistant medical officers in the public health service and in many public institutions can be dismissed at any time without reason at the pleasure of the council appointing them, and that any contract entered into between the local authority and the officer as to notice of termination of service is legally *ultra vires*. Clearly, the usual form of advertisement, which states that the appointment is terminable on either side by so much notice, is misleading, and future advertisements should indicate that the person appointed will hold office during the pleasure of the employing council. There is another aspect of this question which must add to the uneasiness with which officers in the public health service will have read of this action. If, as laid down by Mr. Justice McCardie, a local authority can determine an appointment at any time, the officers will lose all advantages of the Superannuation Act, except that they will be entitled to repayment of their contributions to the superannuation fund, with compound interest thereon.

It is, of course, true that incidents such as that disclosed in this action are rare, and we believe that few local authorities would act in the arbitrary way adopted by the Dagenham Urban District Council, but the possibility remains, and with it the feeling of uncertainty. It is therefore desirable that definite action should be taken by all interested bodies to effect a change which would bring the local authorities within the ordinary law which regulates the relations of employer and employed. And certainly it will be necessary to secure changes in the Local Government and Other Officers Superannuation Act so that an officer who has completed a certain number of years of service and is dismissed from his appointment shall be entitled, in the absence of evidence of misconduct, to a pension in accordance with his years of service, with due regard to Sections 9 and 11 of the Act.

The opinion expressed by Dr. H. C. McManus in two letters on this subject which have appeared lately in our columns, contending that most officers in the public health service and in other public medical posts are prejudiced by their lack of security of tenure, is materially fortified by the decision of Mr. Justice McCardie in the Dagenham case. From correspondence we have received it is apparent that many members in the public services are looking to the British Medical Association to do all in its power to improve their present position as regards security of tenure, to counter so far as possible the effects of Mr. Justice McCardie's recent judgement, and also to deal with the points we have just raised in respect of superannuation. The matter is coming before the Public Health Committee at its meeting this week, and we have no doubt that the Council of the Association, on the advice of that committee, will seek the co-operation of other interested bodies in pressing on the attention of the Minister of Health and of Parliament the necessity for prompt action which will clear up the most unsatisfactory situation now disclosed, and will give to members of the public services a sense of security so long as they carry out their duties in a satisfactory manner.

BRITISH COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS.

IT is doubtful if the importance of midwifery and gynaecology in the medical curriculum is even yet fully recognized by the general body of professional opinion. The tendency rather is to regard the study of medicine and surgery as fundamentally important, and somewhat indiscriminately to class all other branches of practice—for example, orthopaedics, ophthalmology, oto-rhinology, midwifery, and gynaecology—under the heading of specialties. With the growing complexity of medical studies it is inevitable, perhaps even desirable, that certain subjects and groups of subjects should shift from the province of the general practitioner to that of the professed expert. Few would deny, for example, that this holds good in the case of ophthalmology. Can it be maintained that it is true of obstetrics and gynaecology? These two together form a single well-defined whole, whose position to-day as one of the three subjects of a qualifying examination can be traced back to the Medical Act of 1886—"A qualifying examination shall be an examination in medicine, surgery, and midwifery."

It may be questioned, furthermore, whether in any branch of practice so much depends on the knowledge and skill of the ordinary general practitioner as in the practice of midwifery. The general practitioner, as a rule, does not conduct major surgical operations; whenever possible he calls in a surgeon, or sends his patient to a hospital. Even medical cases, if they present exceptional difficulty, may often be dealt with in a similar manner; a consultant may be called in, or the patient may be transferred to a general hospital. But most of his midwifery the general practitioner has to conduct himself; if an emergency arises he must be adequate to meet it; the shortage of maternity beds is general throughout the country, and only rarely at present is he in a position to call in the aid of a specialist. When the fact is added that 3,000 women die each year as the result of childbirth, and that 75 per cent. of the diseases of women owe their origin to what should be a physiological act, it must surely be admitted that every movement to improve the undergraduate and post-graduate teaching of midwifery and gynaecology merits the closest and most sympathetic attention. Such a movement is that initiated by a number of the leading teachers, past and present, of these conjoined subjects in the United Kingdom, to form a British College of Obstetricians and Gynaecologists, with the object of encouraging the study and improving the practice of obstetrics and gynaecology.

The proposed College, of which provisional Articles of Association have recently been drawn up, aims at establishing a Fellowship and admitting to such status those medical practitioners judged by the College to have advanced the science and art of obstetrics and gynaecology. The difficulties involved in constituting the foundation Fellowship and foundation Membership are to be met by making only practitioners engaged in teaching students and graduates at approved hospitals eligible for nomination to the Fellowship, and those holding staff appointments in approved non-teaching hospitals eligible for nomination to the Membership. The promoters further propose to admit to honorary Fellowship of the College not only distinguished obstetricians and gynaecologists, but other eminent persons, whether members of the medical profession or not. Among the objects of the proposed College is the institution of a post-graduate diploma in obstetrics and gynaecology, and authority is being sought to co-operate at some future time, if invited, with existing licensing bodies in the examination of candidates for qualifying diplomas. The post-graduate diploma would be granted only to registered medical practitioners. The College hopes to foster the study and improve the practice of obstetrics and gynaecology by advising in regard to technical training, instituting lectures and demonstrations, and diffusing information on all matters relating to this branch of practice by means of periodicals, books, or other publications. Among its wider activities the College contemplates the possibility of promoting or opposing any legislative or other measures affecting the practice of obstetrics and Gynaecology. In the draft Articles of Association it is laid down that the council shall consist of twelve Fellows and six Members, elected territorially, together with a president, treasurer, and honorary secretary, each of whom must also be a Fellow or Member of the College.

The Memorandum and Articles of Association will be signed by Dr. Henry Russell Andrews, Professor William Blair Bell, Mr. Comyns Berkeley, Sir Francis Champneys, Bt., Dr. Thomas Watts Eden, Professor John Martin Munro Kerr, Professor Charles Gibson Lowry, Sir Ewen John Maclean, and Professor William Fletcher Shaw, and we understand that the project has the approval of every professor of obstetrics and gynaecology in the United Kingdom. The College is thus well sponsored, and its objects will, we think, commend themselves to all who have at heart the progress of obstetrics and gynaecology.

THE HONOURS LIST.

To the medical profession there are two features of more than ordinary interest in the list of New Year Honours which was published on March 1st after a delay of two months owing to the illness of the King. One is the barony conferred on the President of the Royal College of Surgeons of England, and the other is the recognition accorded to a number of women engaged in the work of medical education.

Sir Berkeley Moynihan's elevation to the peerage will be widely welcomed, not only on personal grounds, but because it is the first time this honour has been paid to a surgeon in the active practice of his profession. There has been a growing tendency of late years to add to the House of Lords men engaged in the varied intellectual activities which make up the life of the nation; and it is good that the Upper House of the Legislature should have the advantage of the counsel of another practising member of our profession who has identified himself with the forward movement in science, practice, and organization. His knowledge of public and professional affairs and his gift of clear exposition should prove of great value when matters affecting the health of the community are before Parliament. There is no need for us to dwell on the services Sir Berkeley Moynihan has rendered to the science and art of surgery, or on the reputation he has won for himself as operating surgeon, teacher, and orator; his name is a household word, not only in this country, but throughout the medical profession in every part of the world.

Lady Barrett, Dean of the London School of Medicine for Women, is the first medical woman and the third member of our profession to be awarded the high distinction of admission to the Order of Companions of Honour. Her colleague Dr. Louise McIlroy, Professor of Obstetrics and Gynaecology, becomes Dame Commander in the Order of the British

Empire; and another member of the teaching staff of the London School of Medicine for Women, Dr. Winifred Cullis, Professor of Physiology, is appointed a Commander in the same Order. Miss Frances Ivens, Clinical Lecturer in Obstetrics and Gynaecology in the University of Liverpool, is also awarded the C.B.E. Another distinction which will give particular pleasure to the medical profession is the K.B.E. conferred upon Dr. C. Hubert Bond, Commissioner of the Board of Control, whose work for psychological medicine and for the mentally afflicted is well known to our readers.

LORD DAWSON AND THE LOCAL GOVERNMENT BILL.

THE main feature of the debate on the second reading of the Local Government Bill in the House of Lords was a speech by Lord Dawson of Penn. For this pronouncement he deserves well of the medical profession and the public. Lord Dawson, while favourable to the bill in general, confined his observations to those provisions which dealt with the reform of public health administration, and pointed out two dangers which were inherent in the bill as it stood, but against which it would, if the Government were willing, be quite easy to provide safeguards. These dangers are two of those to which the British Medical Association has prominently drawn attention, and which have been more than once commented upon in articles in the *Journal*. New public health duties will, under the proposals of the bill, be placed upon the councils of counties and of county boroughs, and many of these duties, more particularly in the case of counties, are different in kind from any that the councils have previously been entrusted with. The establishment and management of hospitals for the treatment of general medical and surgical conditions is one of these duties, and though some of the councils have some experience with regard to hospitals for notifiable infectious diseases, to tuberculosis sanatoriums, and, to a smaller extent, with regard to maternity homes, this cannot be held to equip either the councils themselves or their medical officers of health adequately or fully for their new duties. It will, too, be possible for the councils to conduct their hospitals, whether transferred from the Poor Law guardians or newly established, either in competition with, or in co-operative organic connexion with, any existing voluntary hospitals, large or small, in their area. Lord Dawson, voicing the emphatic opinion of the medical profession as well as his own, stated that the latter method was the only reasonable one, and that in any case it would be foolish to "start a new venture, and a sound venture, which might lead to a wide establishment of municipal hospitals for curative medicine in this country and neglect all the traditions and the knowledge that had been gained during the years" by those, both medical and lay, who had been intimately associated with the work of the large voluntary hospitals. Lord Dawson therefore pleaded that the power to co-opt such experienced persons on the committee of the council entrusted with the establishment or conduct of hospitals should be converted into a duty, and so be secured instead of being merely a possibility. He referred to the committee in question as the Public Assistance Committee; but though this is indicated in the bill, perhaps with undue emphasis, as a possible arrangement, councils are not bound to adopt it in their administrative schemes. It is to be hoped that councils will in those schemes—at all events in the case of all county boroughs and many counties—assign their hospital functions to their Public Health Committees, which may, under the bill, equally contain a minority of co-optative members. Even if, in the case of some counties, it may prove a more convenient immediate arrangement to leave transferred hospitals under the Public Assistance Committee, this should be merely a device for gaining time, and they should, after a defined and limited period, pass under the control of the Public Health Committee, possibly by means of a hospital subcommittee of that committee. In any arrangement, should co-option remain permissive only, every effort ought to be made to secure it. Lord Dawson's second main point was connected with his anxiety—shared by the British Medical Association—lest the general body of private practitioners should be dissociated from the health work of the local authorities. He observed that "up to now the medical staff of the health services of this country had been run by a small number of medical men. They had been men who had specialized in preventive medicine—medical officers of health, tuberculosis officers, school medical officers. Ever since the Ministry of Health Act was passed it had been a regrettable fact that the policy of these official doctors proceeded on lines totally divergent from those doctors who constituted four-fifths of the profession and who belonged to the curative branch. That divergence was lamentable." There is some over-emphasis here, but Lord Dawson's suggestion was that in each area "there should be set up, under the chairmanship of the medical officer of health, an advisory council of doctors." Such a representative advisory statutory medical council has been proposed by the Association, but it is not at the moment being pressed for. The opinion is that in present circumstances the very important end desired may be better attained by securing co-option of members of the general profession on the various committees of councils dealing with the public health services, and by bringing about a closer connexion between Divisions or Branches of the Association and the councils and chief medical officers of local government authorities. If this can be achieved there may be developed a real alliance between prevention and cure in health matters, for both are the concern of, and, in fact, are largely practised by, public health medical officers and private practitioners alike.

EVOLUTION OF THE HUMAN FOOT.

THE H. O. Thomas Memorial Lecture, which was delivered by Sir Arthur Keith at Liverpool last May, has now been published in the *Journal of Bone and Joint Surgery*; it will repay careful study. Like all Sir Arthur Keith's handiwork, it is characterized by learning, research, keen observation, and clarity of exposition. He returns to an aspect of the subject with which he dealt nearly seven years ago (*British Medical Journal*, 1922, i, 736), filling in detail and adding the results of new investigations into the evolutionary history of the human foot. Taking as examples the feet of pronograde monkeys, orthograde apes, and man, this fascinating inquiry leads us to a study of the anatomy of the foot in each of the genera considered, and of the evolution of the muscles and tendons, in response, as it were, to the calls made upon them by the needs and habits of each genus or species. The importance of muscular action in the maintenance of an efficient foot has been long insisted upon by Sir Robert Jones, and the anatomical and developmental evidence brought forward by Sir Arthur Keith fully supports this view. The fate of ligaments when unsupported by muscles can be seen by all who will look at the deformities following anterior poliomyelitis, while, on the other hand, the apparently flat foot of the stage dancer shows that well-developed muscles can render the foot highly efficient, notwithstanding great laxity of ligaments. The mechanical arch of the foot, in an architectural sense, with its so-called keystone, is a figment of the imagination, and belief in its existence can only be retained by those whose mechanical insight is as small as their appreciation of the role of muscles. In examining the form and functions of the foot it is necessary, as Sir Arthur Keith points out, to bear in mind the

important consideration that evolutionary alterations in the human foot involve widespread changes in all the systems of the body, and that the type of foot of the orang, the gorilla, the chimpanzee, the gibbon, and others is the response of evolution to the demands of the whole organism. Lord Monboddo, with his admirer Peacock, and others, believed that modern man was the degenerate descendant of giant ancestors. In a sense Sir Arthur Keith supports this view, for he sees reason to think that we may be descended from giant arboreal ancestors, whose bodies, like that of the East African gorilla, became too heavy for climbing; they adopted, therefore, a terrestrial life, and developed a heel-bearing plantigrade foot. This study of the structure, and especially of the muscles of the foot of the gibbon, the great apes, and man, shows beautifully how the human foot may have developed from that of an unknown arboreal ancestor to its present state; Sir Arthur Keith confesses his ignorance how this has been brought about, but declares his certainty that the change has been effected "by biological means which are still resident in the body and will be discovered." The forces which we call Providence or Nature have thus, through uncounted ages, been busy fitting us with feet suited to the needs of barefooted man, but European man compresses all this elaborate mechanism of bones, muscles, and ligaments into a stiff unyielding case, which allows only a few of the crudest movements of the foot. We may judge to what an extent this restriction has been carried by the fact that the movements of the foot in everyday use can be so successfully imitated by an artificial one as to defy detection when the amputation is below the knee. Yet such a prosthesis, in place of the elaborate mechanism of the living foot, has only one joint which allows a hinge movement at the toes, and another outside the foot proper, at the ankle. Woman, meanwhile, emulous of her pronograde ancestor, raises her heel three inches from the ground, and destroys the efficacy of the hallucial lever by forcibly squeezing her great toe into a position of complete mechanical inefficiency. Yet despite this her athletic achievements surpass all that we have heard of Atalanta or the Amazons.

RADIUM FOR THE LONDON HOSPITALS.

To a distinguished gathering, which included the Lord Chancellor (Viscount Hailsham), at a reception at the Wellcome Historical Medical Museum on March 1st, Sir John Rose Bradford, P.R.C.P., explained the methods which the committee of the King Edward's Hospital Fund proposes to adopt in utilizing the radium purchased with Sir Otto Beit's gift of £50,000. It was much regretted that Sir Otto Beit himself was prevented by illness from attending. Sir John Rose Bradford reminded the company that this generous gift was not the only service that Sir Otto Beit had rendered to medicine; many years ago he gave a large sum to be expended in the foundation of fellowships for the pursuit of investigations into the causes and nature of disease. The problem of dealing, on behalf of the London voluntary hospitals, with a gift of £50,000 for the purchase of radium, Sir John Rose Bradford said, had not been an easy one. The quantities of radium at present available, owned or on loan, at the hospitals had first to be ascertained. No one hospital possessed quantities approaching those available at some treatment centres on the Continent, nor would possess such quantities even as a result of this gift and of the gifts of £25,000 to the London Hospital for the same purpose. The decision of the Fund committee was that, in the first place, a certain very limited number of hospitals should be provided with a quantity of radium sufficient to enable them, with their own supplies, to function as radium centres, not only treating their own patients, but supplying radium emanation to other hospitals; and, in the second place, that there should be distributed among the hospitals in a more general way, as far as the amount at the disposal of the Fund permitted, such supplies as would enable them to treat, if not all, a certain number of their patients who required radium treatment. Certain special hospitals—those dealing with diseases of women, for example—had greater immediate need of radium than others. Three of the twelve large teaching hospitals had, or would shortly have, as a result of specific donations, quantities of radium of their own sufficient to provide radium emanation, and at present would not share in the Beit allocation. In another case an allocation would be made sufficient in amount, with the radium available at the hospital, to provide emanation. Thus four radium centres would be established. Some of the other teaching hospitals had only very small quantities in their possession, and one of them had none at all. After allocation through the Fund these would all have quantities adequate to meet at least some of their needs. Allocations would also be made to certain of the general hospitals without schools, to the hospitals for diseases of women, and to some of the other special hospitals, having in view the nature of the diseases treated by them. These hospitals had been asked to inform the Fund of the measures they proposed to take for the use and custody of the radium. Sir John Rose Bradford instanced the chief regulations which had been made for the distribution. The radium would be on loan to the individual hospital for one year, and would be subject thereafter to withdrawal at one month's notice. It would be available for all hospital patients, ordinary or pay-bed, but it was not to be removed from the hospital premises without the written authority of the Fund. Periodical reports from the hospitals would be expected, showing the stocks of radium, the milligram hours of use, and the number of patients treated. In conclusion, Sir John Rose Bradford emphasized the urgent demand for larger amounts of radium, especially for research into the best methods of treatment. He also mentioned that approximately one-quarter of the funds available had to be expended on the costly provision of containers and the placing of the radium therein. Before the gathering broke up a vote of thanks was accorded to Mr. Henry S. Wellcome for his hospitality, and Mr. Wellcome, after describing the radium benefaction as one of the finest pieces of Samaritan service to the community, spoke of his expectations with regard to the future of his museum, which, he said, was as yet in its infancy, and occupied merely a temporary abiding place. It was his hope to rehouse the entire collection. The exhibits represented, he said, only one-tenth of those available.

UNIVERSITY HYGIENE.

HYGIENE, as understood in this country, has a wider and a narrower meaning. In its wider sense it is the rule of health for the whole community. In its narrower sense it is a special system or way of living enjoined upon people who can be grouped together as sharing common risks or a common environment peculiar to their group. In this narrow sense we speak of naval or military hygiene, of school hygiene, or industrial hygiene, as special departments in each of which the distinctive factor is readily apparent, but we do not speak in the same definite way of university hygiene, since no specific code of health for undergraduates has so far been laid down. The country doubtless is not indifferent to the welfare of the members of its universities, but their general circumstances and occupational conditions have not hitherto been thought to mark them out as a class in need of organized health guidance. In North America such guidance is in many cases freely given, and university hygiene there often represents an extensive field of activity. It may embrace the medical inspection of freshmen and

follow-up inspections in later years, the supervision of gymnastic training, the discovery and employment of athletic talent, the care of the sick undergraduate and his medical or surgical treatment in hospital. In these particulars, as is pointed out by Dr. Robert Jacquet, president of the National Students' Union of France, in his essay on university hygiene,[1] America is ahead of England and France; but whereas in England the average undergraduate, a member of a "caste sportive et fortunée," may stand little in need of organized health care, the French student too often is under hygienic and other disabilities for which some remedy is urgently required. The lodgings available to students in France are usually of an inferior type, dark, ill ventilated, and inadequately heated, and the standard of attendance may not be high. The hostels provided by the universities themselves are an improvement on these furnished lodgings, but are frequently situated in some old quarter of a town, with narrow streets and a thronging population. At Nancy, however, a residential college is being built in a fine open park round the château of Montbois. Sport in the French universities appears to have fallen from its high ideals of twenty years ago. It no longer seeks to foster manliness. It has become, instead, a commercial enterprise, in which the search for champions has been carried to inordinate lengths. University sport, in Dr. Jacquet's view, should be taken from the hands of trainers, and committed, in its medical and ethical aspects, to the general charge of the Minister of Education, the governing body of each university assuming the responsibility of local management and arranging time tables so as to give each undergraduate free access to the playing fields. In the matter of feeding all but two French universities have restaurants of their own. These places are under student management, but with the best will in the world, Dr. Jacquet thinks, the student manager has neither the time nor the training to make himself a competent restaurateur. The town councils of university towns should assume this charge, by way of return for the distinction and profit they derive from the presence of a university in their midst. Hygiene should be taught to all undergraduates, not students of medicine only. Any vocational examination of boys to ascertain their fitness for a profession should be carried out by medical men, aided, it may be, but certainly not displaced, by physiologists or psychologists. Approval is expressed of university dispensaries, convalescent homes, rest camps, and accommodation for open-air teaching. Dr. Jacquet's essay is an earnest appeal on behalf of the student community of his country, and its effects are sure to be watched with sympathy on this side of the Channel.

VARIETY IN REPETITIVE WORK.

THE latest report[2] issued by the Industrial Fatigue Research Board deals with a matter which, in one form or another, must have engaged the attention of every intelligent worker in any sphere—a comparison of the effects produced by variation and by uniformity in work. An earlier investigation showed that in most repetitive processes in industry the operations are not repeated with mechanical precision, but that some variety is introduced, either by a cessation of work or by some change in its nature. This arises sometimes from the conditions of the work and sometimes from the action of the operator. Subsequent inquiry has yielded inconclusive evidence as to the effects of variety upon output, and Mr. Wyatt and his colleagues accordingly attempted first to clear the ground by investigating the result of introducing changes into certain repetitive processes—soap wrapping, handkerchief folding, and bicycle chain making—and then extended their inquiry to three other processes—tobacco weighing, cigarette making, and assembling cartridge cases—in an effort to determine (1) the optimum duration of one form of activity before changing to another, and (2) the most suitable type of work for the alternating processes. They found that when the form of work was changed at specified times within the work spell, output was usually increased, and a steadier rate of working was maintained. Results were most favourable where there was a substantial difference in the successive tasks performed, but although output was not much affected in such cases minor changes in the nature of the work done were welcomed by the operatives. Where numerous changes were made the results were unsatisfactory; the "swing of work" was interrupted, and the maximum rate was seldom attained. The most suitable interval between changes in the form of activity proved to be from one and a half to two hours; and output was higher when changes were made at prearranged times than when made casually at the whim of the operatives. This brief summary of the investigators' conclusions does not do full justice to their work, for their inquiry, like others of this series, opens up several new avenues of investigation and brings to light facts which should prove of considerable value to those engaged in industrial administration. The report is not explicitly of much medical interest, for it is concerned mainly with the relation between output and certain aspects of working conditions in the factory, and does not deal directly with the psychological or physiological sides of the question. It gives, however, some interesting notes on the mental attitude of the operatives concerned in the experiments. Such documents, moreover, should be of some value to those engaged in general practice in industrial areas. Lastly, there is a strong "human interest" in investigations of this nature. Which of us, having performed any long and tedious task, can fail to sympathize with the girl operatives employed in fixing lids to cigarette tins who, having been supplied with lids in batches of three gross at a time during the investigation, objected at its conclusion to reverting to batches of five gross? The change made no difference to the amount of work to be done, but, as the report observes: "A certain amount of pleasurable satisfaction is evoked by the successful completion of a task, even though it is only part of a larger whole."

INCIDENCE OF TUBERCULOSIS IN ADELAIDE.

IN the course of his report on the state of the public health of the city of Adelaide for the year ending September 30th, 1928, the medical officer of health, Dr. E. A. Johnson, gives an account of an interesting investigation into the prevalence of tuberculosis among hospital patients. Dr. J. B. Cleland, professor of pathology in the University of Adelaide, made an analysis of his findings in 800 unselected cases on which he had personally conducted *post-mortem* examinations. Many of these cases came from the public hospitals, some even from the consumptive home, so that the incidence of tuberculosis found in this investigation was probably higher than among the general body of the population. Yet of the 800 cases under consideration as many as 527 were shown by necropsy to be free from any tuberculous focus. The 273 to be accounted for included 230 with definite tuberculous lesions; in 103 of these the lesions were healed and calcified; in 11 the lesions were small and healing or quiescent, and only in 51 were there extensive pulmonary lesions. In 43 cases slight lesions were present, but the evidence as to their possible tuberculous nature was indefinite. In short, among 800 hospital

[1] *Essai sur l'Hygiène Universitaire.* Par Dr. Robert Jacquet. Préface de M. Edouard Herriot. Paris: N. Maloine; Nancy: C. André. (Roy. 8vo, pp. iii + 143; illustrated. 15 fr.)

[2] Report No. 52. By S. Wyatt, M.Sc., M.Ed., and J. A. Fraser, M.A., B.Ed. (assisted by F. G. L. Stock). London: H.M. Stationery Office, or through any bookseller. 1s. 3d. net.

patients approximately 550 had no obvious tuberculous lesions, while in a majority of the rest what lesions were present were slight, quiescent, or healed. The figures are interesting in view of the far greater prevalence of pulmonary lesions one would expect to find in the course of a similar investigation among hospital patients from a large European centre.

INFLUENZA.

As pointed out in our note of last week (such a note necessarily goes to press before the returns of the current week are available) the course of the mortality ascribed to influenza and of the notified prevalence of pneumonia down to the week ending February 16th suggested that the maximum for the whole country had been reached, although increases were still taking place in the Midlands, the North, and Yorkshire. The returns for the week ending February 23rd showed, however, that this expectation was not fulfilled. In London itself, although the notifications of pneumonia continued to decline—the returns for the three weeks ending with that of February 23rd were 689, 562, and 554—the deaths ascribed to influenza increased from 393 to 473. The expected increases in the Midlands, the North, and Yorkshire were larger than had seemed probable, so that the total of notifications of pneumonia, which had fallen in the week ending February 16th to 3,658 (3,898 in the previous week), increased sharply to 4,451. There has been a corresponding but patchy increase in the numbers of deaths from influenza in the great towns, so that the total mortality, 1,764, was very large—40 or 50 per cent. greater than might have been anticipated. One naturally asks whether the unfavourable turn can be attributed to weather conditions. The returns of the week ending February 16th showed no sign of this, but in those of the week ending February 23rd there is a decided increase in the proportion of deaths from influenza at ages over 65, so that this proportion, already large, had become the greatest yet recorded this year. In 1895, a year also blessed—or cursed—with prolonged cold in February, there was also a sharp increase of mortality ascribed to influenza and respiratory diseases—indeed, a sharper increase than this year. Hence the weather may be given the credit of part of the unfavourable turn taken by the prevalence of influenza. In the circumstances it would be even rasher than it usually is to prophesy when the wave of mortality will subside. Clinically the type of illness continues to be generally mild, but we cannot doubt that the winter of 1928-29 will prove to have been an unfavourable one for those in the decline of life.

OXFORD OPHTHALMOLOGICAL CONGRESS.

THE nineteenth annual meeting of the Oxford Ophthalmological Congress will be held on July 4th, 5th, and 6th, 1929, under the presidency of Mr. A. B. Cridland. The members will assemble at Keble College (where accommodation has again been offered) on the evening of Wednesday, July 3rd, and on the following morning there will be a discussion on "Diseases of the lacrymal apparatus," introduced from the ophthalmological aspect by Professor Joseph Meller of Vienna, and from the rhinological by Dr. J. S. Fraser, surgeon to the ear, nose, and throat department, Edinburgh Royal Infirmary. The Doyne Memorial Lecture will be delivered on the morning of July 5th by Dr. Ida Mann, her subject being "Some observations on the vascularization of the vertebrate eye." On Friday afternoon there will be a discussion on the "Ocular manifestations found in fractures of the skull," to be opened from the point of view of the general surgeon by Mr. Hugh Cairns, and from that of the ophthalmic surgeon by Mr. Charles Goulden. Miscellaneous papers and demonstrations are also being arranged, and one afternoon will be given up wholly to demonstrations. The annual dinner of the congress will be held on July 4th in the Hall of Keble College. The full programme will be issued in June. All communications should be addressed to Mr. C. G. Russ Wood (12, St. John's Hill, Shrewsbury), who is acting as honorary secretary.

ROYAL COLLEGE OF SURGEONS COUNCIL ELECTION.

THE Secretary of the Royal College of Surgeons of England has sent out the usual election notice, which on this occasion informs the Fellows of the College that on Thursday, July 4th, at 11 a.m., there will take place an election of four Fellows into the Council in the vacancies occasioned by the retirement in rotation of Sir H. J. Waring, Mr. C. H. Fagge, and Mr. W. Sampson Handley, and by the resignation of Sir James Berry. Blank forms of nomination and of the requisite notice from a candidate may be obtained on application to the Secretary, and the same must be received by him, duly filled up, not later than Monday, March 18th. A voting paper will be sent by post on April 2nd to each Fellow whose address is registered at the College. The candidate elected by the smallest number of votes will become substitute member of Council for Sir James Berry until 1931.

THE annual Harveian Lecture before the Harveian Society of London will be given by Dr. E. Graham Little, M.P., on Thursday next, March 14th, at the Paddington Town Hall, Paddington Green, at 8.30 p.m. The subject of the lecture is "The medical profession, the voluntary hospitals, and the De-rating Bill." As this measure is of great importance to the whole medical profession, all practitioners and students are cordially invited to attend.

UNDER the auspices of the National Council for Mental Hygiene, Sir Maurice Craig, M.D., will deliver a lecture on the problem of nervous breakdown, at the rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square, W., on Wednesday, March 13th, at 5 p.m.

WE regret to announce the death of Alex Hill, M.D., F.R.C.S., who was in succession Master of Downing College, Cambridge, Principal of University College, Southampton, and secretary of the Universities Bureau of the British Empire.

THE KING.

THE bulletin issued from Craigweil House, Bognor, on Saturday, March 2nd, after an interval of a fortnight, laid stress upon two points. One is that the King continues to make slow but steady progress. The other is that the complete recovery which is confidently looked for must not be endangered by premature exertion of any kind. "One of the most anxious features of His Majesty's grave illness was severe exhaustion due to prolonged toxaemia. For this reason careful avoidance of any sustained effort of body or mind will be necessary for a lengthened period." The logic of this will be apparent to every medical reader who recalls the violence of the streptococcal infection, the length of the acute stage of illness, and the prostration which follows such blood infections even in young patients. For weeks on end the King's life hung in the balance, and restoration to health after so severe and so protracted an illness must be a matter of months.

INDUSTRIAL MALADIES.

LECTURES BY SIR THOMAS LEGGE.

SIR THOMAS MORISON LEGGE, C.B.E., M.D., late Senior Medical Inspector of Factories, has delivered on the last three Monday evenings the Shaw Lectures of the session to the Royal Society of Arts, his general subject being "Thirty years' experience of industrial maladies." In his first lecture, however, Sir Thomas Legge explored a more pleasant territory, telling his audience how in his rounds of factory inspection he had kept a disengaged eye for the "looks" of the worker, and had divided female workers into categories of beauty. Thus he had found some factory girls—and he showed photographs to prove it—whose features recalled the work of Rossetti and Burne-Jones and the Greek type generally; others recalled Reynolds, Gainsborough, Raeburn, and Lawrence, and others again, of the more "pretty" type, were after Romney. These, of course, were young women, under 30; the marks of age appear quickly on the factory worker, and had he taken the age period 31 to 40, instead of 18 to 30, he would have found, not 72 per cent. of good looks, as with the younger women, but only 25 per cent. One great improvement in looks as also in health was due to the disappearance of the anaemia which he was accustomed to find thirty years ago among the young women employed in factories. He also noticed the splendid teeth of women workers in the East End of London, in striking contrast to their sisters in the North of England.

Prevention of Occupational Diseases.

In his second lecture, speaking of the prevention of occupational diseases and poisonings, Sir Thomas Legge said that he had come to certain conclusions which he could express as aphorisms. He enunciated them bluntly in a wholly impartial spirit, having the greatest respect and regard for both sides in industry, employers and employed: "Unless and until the employer has done everything, the workman can do next to nothing to protect himself." "If you can bring an influence to bear external to the workman—that is, one over which he can exercise no control—you will be successful, and if you cannot or do not, you will not." "All industrial lead poisoning is due to the inhalation of dust and fumes, and if you can stop their inhalation you will stop the poisoning. It is not due to dirty hands—that is, eating with unwashed hands." He proceeded to give some examples of how influences external to the workman had resulted in great improvement, if not in the disappearance of the malady, after mere regulations had proved a failure. One of these was, in match manufacture, the substitution of sequi-sulphide of phosphorus for yellow phosphorus; another the conversion of pulp white lead into oil paint ready for the market in automatic closed-in machines, so successfully achieved by the white-lead makers; yet another the use of low solubility glaze in pottery manufacture. Commenting upon the great diminution in the number of cases of lead poisoning since 1910, Sir Thomas Legge said that this was due in a measure to the fact that employers began to appreciate the risk of using lead and to the improved appliances for removing fumes and dust. Strict regulations by the Home Office had accounted to some extent for the remarkable fall in the number of cases occurring in the white lead industry, but ten times as important in this respect had been a discovery made within the trade itself. It was found that white lead would mix more readily with oil than it would with water, and that if white lead were put in a closed machine with oil the two would mix together intimately, and would come out at the other end as lead ready mixed for the painter. This was an important achievement, and had had a far-reaching influence in reducing the number of lead poisoning cases.

As for the pottery industry, if he were asked what was the sheet anchor for the protection of a worker in the dangerous trades, he would say the provision of fans for carrying away dust, but here again what had given the *coup de grâce* to lead poisoning in the pottery industry had been a revolution in technique, brought about this time by an invention by Sir Edward Thorpe, then Government chemist, who discovered that if the glaze and lead used in pottery were mixed in definite proportions with a certain amount of ground siliceous material it would form a bi-silicate of lead which was insoluble in the alimentary canal and also in the lungs. Thus it came about that low solubility glaze was used in the pottery industry to-day. An industry in which lead poisoning had appeared since the war was ship-breaking. The armour plating of battleships was cut up with an oxy-acetylene pipe, and when the flame came into contact with the red lead paste at the back of the plates it volatilized the lead and created a fume which was inhaled by the workman and caused illness. There had been an extraordinary rise in the number of cases due to the inhalation of this fume, and this indicated once more that lead poisoning was due to the inhalation of fume or dust, and not to swallowing, because in this particular instance there was nothing that could be swallowed. Here, again, it seemed necessary to emphasize that to stop lead poisoning it was important to get some means external to the workman over which he could not exercise control, and not to rely upon wash-basins, respirators, or gloves, because the lead that caused the trouble did not go through the skin.

In the accumulator industry the most dangerous processes were concerned with what was called the pasting of the plates. If only some means external to the worker were found whereby the plate paster could be made automatic there would be an immediate drop by about 50 per cent. in the number of cases of lead poisoning in the accumulator industry. Short of this, however, a great deal could be done, and indeed had been done, in the accumulator industry to mitigate the risks which the workers ran in inhaling lead compounds. In one particular accumulator factory, among about 1,000 persons exposed to lead, there were 11 cases of lead poisoning in 1926 and 18 cases in 1927. The firm in question recognized the necessity for tackling the problem, and carried out improvements to a very high state of perfection. The first thing done was to appoint a whole-time medical officer, who immediately began to study the processes and the risks attending them, examining also the effect upon the blood of the workers. As a result of the measures taken not a single case of lead poisoning occurred in that factory last year.

Diseases Scheduled for Compensation.

In his final lecture, Sir Thomas Legge spoke from twenty years' experience of compensation for industrial diseases. After dealing with several of the diseases and forms of poisoning scheduled, he said that he thought the time had come to consider whether chronic poisoning by sulphuretted hydrogen gas should not be added to the list of scheduled diseases. If this were done he had no doubt that it would stimulate, before long, the discovery of some means external to the workman, such as locally applied exhaust ventilation, which would cause the disease to become a negligible factor. No one knew what new occupational maladies, involving an enlargement of the schedule, might arise as a consequence of industrial developments in chemistry. Poisoning from tetrachloride or from manganese was undreamed of when workmen's compensation was instituted. One disease, asbestosis, he thought, would have to be scheduled in the same way as silicosis, which in its symptoms it resembled.

Sir Thomas Legge (whose chairman was Mr. Ben Tillett, a well-known trade union secretary) devoted a large part of his lecture to explaining some of the useful suggestions with regard to previously disregarded maladies that had been brought forward by trade union secretaries. One such secretary, himself almost blind, was the first to direct attention to glassworkers' cataract. As a consequence, Sir Thomas Legge went down to St. Helens and examined the eyes of 500 glassworkers who had been subjected to the glare of the furnace, taking 278 other persons, not so exposed, as controls. He found among the 500 glassworkers that in the right eyes of 64 and the left eyes of 72 there were quite obvious changes, whereas among the controls the figures were 14 and 13 respectively. The reason why among glassworkers the left eye was more often affected than the right was because the left eye was turned inwards upon the "glory hole" of the furnace. After these and other investigations on the frequency of senile cataract, he had

no hesitation in concluding that glassworkers were specially subject to the condition, and recommending the scheduling of the disease. The same trouble was subsequently discovered among men exposed to the glare of molten iron.

Another instance in which the suggestion of a trade union secretary had been of value was with regard to a form of poisoning brought about among shuttle workers when West African boxwood (*Gonioma kamassi*) was used. Such workers were noticed to show a tendency to doze, almost falling from their benches, and it was discovered that the wood contained an alkaloid which was a very powerful depressant of the heart. He examined numbers of men suffering from that form of poisoning, with the result that the condition was scheduled; but the use of the wood had now been discontinued, other woods taking its place, and there had been no more cases.

It was another trade union secretary who noticed how the makers of briquettes or patent fuel suffered from the effect of the pitch which constituted 10 per cent. of the briquette. The lecturer had examined a large number of men, and found the frequent occurrence of skin cancer from this cause. In the years 1920–26, amongst patent fuel workers there were 143 cases of epitheliomatous ulceration or skin cancer for which compensation was paid, and the number of deaths was only 5; but in other trades the proportion of deaths to notified cases was much larger. For example, in tar distilleries there were 89 cases and 12 deaths; among the retort men employed at gasworks, 41 cases and 16 deaths; and among mule-spinners (no doubt whatever due to a mineral oil) 260 cases and 73 deaths. These figures suggested that in certain trades there were large numbers of cases which went unnotified, owing to the non-dissemination among the workers of the necessity of getting treatment for a dangerous condition, otherwise it was difficult to explain the disproportionately high death rate to number of cases. He believed that radium offered a probable means of curing the malady or making it less fatal.

After dealing with chrome ulceration, with baker's dermatitis (the number of cases of which he thought might be expected to increase from year to year), and with silicosis, Sir Thomas Legge turned finally to the malady which accounted for the greatest number of compensation payments—namely, miners' nystagmus. In 1927 the number of cases for which compensation was paid was 9,736, in 1,802 of which the first payment had been made during that year. This compared with 2,759 cases of subcutaneous cellulitis of the hand ("beat-hand"), 2,309 cases of "beat-knee," 367 cases of "beat-elbow," 279 cases of inflammation of the synovial lining of the wrist-joint, and 275 cases of lead poisoning and its sequelae. He mentioned that miners' nystagmus had not come within his purview, because his work had been limited to factories and workshops; but he shared the view of Dr. J. S. Haldane and others that it was due to the enormous strain, ending in a psychoneurosis, caused by looking at the non-reflecting coal surface.

JORDANBURN NERVE HOSPITAL AND PSYCHOLOGICAL INSTITUTE, EDINBURGH.

THE one hundred and sixteenth annual meeting of the Royal Edinburgh Hospital for Mental Disorders at Morningside, Edinburgh, was held on February 25th, with the Lord Provost, Sir Alexander Stevenson, in the chair. The report of Professor G. M. Robertson, physician-superintendent, showed that in the institution, including Craig House and West House, there had been under treatment during 1928 a total of 277 voluntary patients and 795 certified patients. During the year 114 voluntary patients were admitted, as compared with 98 under certificate, and the excess of those admitted voluntarily, which has been the rule for several years past, is accepted as a gratifying development, because it is usually accompanied by earlier treatment and by a more willing co-operation on the part of the patient in the measures adopted, transforming the atmosphere of detention into the freer air of the modern hospital. In the six nursing homes which have been established by the managers during the past ten years there had been treated during 1928 a total of 203 patients. The report deals specially with the Jordanburn Nerve Hospital and Psychological Institute, which has been provided by the managers as a new departure, distinguished from the other institutions already under their management, enjoying the legal status conferred by their new charter, and corresponding in general to that of voluntary hospitals for general physical diseases.

The Jordanburn Nerve Hospital is a one-story building of 50 beds, divided equally between the two sexes. A verandah runs the whole length of the building on the southern side, and faces a garden, two acres in extent, for the provision of the fresh air and sunshine which are essential agents in the treatment of nervous disorders. The entrance is in Morningside Park, which is conveniently situated for access from the city. In order to meet the requirements of nervous patients who can receive treatment and at the same time carry on their duties at home or in the workshop, the managers have built a new out-patient department at a cost of £10,000, where a clinic will be held every forenoon at 10.30, and at other suitable hours. The clinic is intended also to provide Edinburgh with facilities for the performance of the various psychological investigations, examinations, and mental tests that every great city should have at its disposal for its educational, social, and judicial services, and will thus play the part of an important civic institution. The organization of the clinic, in addition to giving advice in psychiatry, will have a mental deficiency department, a department for neurology in which organic nervous diseases and epilepsy will be dealt with, a psychological department for research work, a child guidance clinic, and a social service department, from which workers will visit patients in their homes.

The report points out that the provision of all the necessary machinery for team work under one roof gives the Jordanburn Nerve Hospital a unique position in relation to problems of nervous disorder. Co-ordination of the whole scheme will be effected under the directorship of the physician-superintendent of the Royal Mental Hospital. The work of the out-patient department is intended to be gratuitous, and most of the staff are voluntary workers, but it is hoped that such expenses as are incurred will be defrayed by the public in view of the benefits conferred. As regards in-patients, it is intended that one-fourth of the accommodation shall be reserved for those who cannot pay for treatment. The extent to which the managers will be able to help the poor will depend, however, on the financial support that they receive from the public, and on funds or endowments that may be bequeathed by those who sympathize in the objects of the institution. In the paying wards the rate will be two guineas a week. The teaching of undergraduates is to receive careful attention, and the managers are building a lecture theatre at a cost of £8,000, which is expected to be ready before the beginning of next year. It is intended to use this for classes of medical students, for post-graduate teaching, and for popular lectures of an educational character. It is also intended ultimately to erect psychological laboratories on a site which has been set apart near the hospital, but as the additional cost is expected to be £20,000 the construction has meanwhile been deferred.

Inaugural Dinner.

To mark the inauguration of the Jordanburn Nerve Hospital, a dinner was held in the Hall of the Royal College of Physicians, Edinburgh, on February 25th. The MARQUESS OF LINLITHGOW, K.T., presided. Sir WALTER FLETCHER, in submitting the toast of "The Jordanburn Nerve Hospital," said that in the great war he was inclined to think that the medical profession had been better prepared than the military profession, but in one direction medicine had been found wanting, for it had no organized approved scientific system for dealing with war neuroses. The medical profession had not had, in its medical training, any instruction in the processes of the human mind in relation to the machinery of the nervous system, and specialists were at that time torn by acute controversies on what were the best methods of dealing with forms of mental disorder. After the war, however, great gain had come in this particular field of work, and a great wealth of experience had been obtained. In Scotland he believed he was right in saying that over 60 per cent. of all who entered the mental hospitals did so voluntarily and not as certified insane. Edinburgh had led the way in respect of its attitude to mental disorders, and

he thought this city was striking out in front of any other civic capital. He thought the present movement was not unworthy to rank with any of the great Edinburgh enterprises of the past. Dr. ROBERT A. FLEMING, President of the Royal College of Physicians, gave details of the inception and history of the Royal Edinburgh Hospital for Mental Disorders, and referred to the many cases in which mental experts failed to make up their minds in medico-legal cases as to whether a criminal was sane or insane; but this new departure which they were celebrating might lead to greater improvement in this respect. Professor LORRAIN SMITH expressed congratulations to the board of management on the foundation of the new institute at Jordanburn, and said that this was one of the few occasions in which, coupled with a hospital which was a place of treatment, there was to be an institute as a place of investigation. The foundation of the institution was a memorable event in the medical school and in the city of Edinburgh. Miss OLGA NETHERSOLE, of the People's League of Health, said she was convinced that what the Government did not spend on adequate housing, education, and protection of workers had to be paid a hundredfold in hospitals, workhouses, asylums, and homes for cripples. There was work for voluntary health organizations in connexion with the prevention of mental breakdown, which was one of the costliest and least hopeful to the national expenditure. This comparatively new branch of medicine must look to research and education for its great advance. Sir ARTHUR H. ROSE, chairman of the Board of Control, in proposing the toast of "The Board of Managers," said that Scotland owed a great deal to the authorities who managed its royal asylums, for without these progress in dealing with the terrible affliction of mental disease could never have been so great in Scotland as it actually was. He thought that the public spirit of the board at the Morningside Hospital had now taken a material step in advance in the treatment of this terrible affliction. Professor G. M. ROBERTSON, in proposing the toast of "The Chairman," expressed his admiration of the work which the board of managers of the Royal Edinburgh Hospital for mental disease had done, and he thought that in the present instance the board was not only keeping in the van, but was doing a valuable work in exploration.

New Zealand.

[FROM OUR CORRESPONDENT.]

Annual Conference of the New Zealand Branch of the British Medical Association.

THIS conference, arranged to take place under the patronage of His Excellency the Governor-General on February 19th and following days, comprises sections of surgery, medicine, diseases of the eye, ear, nose and throat, obstetrics, radiology, psychiatry, and preventive medicine. The programme includes a discussion on cancer, to be opened by Mr. Sampson Handley of the Middlesex Hospital, and keen satisfaction is expressed by members of the New Zealand Branch that he is to honour the conference as representative of the Association. Mr. Victor Bonney's visit last year was most inspiring and instructive, and earned the deep gratitude of the Branch, which is anxious to maintain the closest possible relationship with the parent body. Other features of the conference are a series of surgical operations, clinics, and demonstrations to be held at the Wellington Hospital, and an extensive programme of entertainments, including receptions at the Houses of Parliament and the Viceregal residence. Arrangements have been made for meetings of the New Zealand Fellows of the College of Surgeons of Australasia, to take place on the day preceding the opening of the conference.

Dangerous Drugs.

New regulations have been issued under the New Zealand Dangerous Drugs Act, and the schedule of drugs to which the Act applies has been extended. A medical practitioner in emergency may, orally or by telephone, direct a registered chemist to whom he is known personally to dispense for a patient a dangerous drug, but must forthwith reduce such prescription to writing and transmit it to the chemist. He may only prescribe in any case for the purposes of medical treatment, and must understand that his prescription shall be dispensed only once, though, if he so directs, it may be dispensed on not more than three occasions, at intervals to be specified on the prescription. The chemist must retain such prescription for one year. The various proprietary preparations of heroin linctus and syrup cocillana come within the scope of the Act.

Mental Defectives Act.

Some of the provisions of the amended Mental Defectives Act of New Zealand are noteworthy. If any magistrate or justice is of opinion that a person brought before him charged with an offence is mentally defective he shall forthwith advise the chairman of the board, who shall require an investigation of each case to be made by a psychological clinic, the term "mentally defective" including the feeble-minded and the socially defective, and not simply the insane. Every person who, except for medicinal purposes on the written authority of a registered medical practitioner, supplies any intoxicating liquor to be consumed by any mentally defective person registered under this Act commits an offence, and is liable on summary conviction to a fine of fifty pounds. Furthermore, every woman or girl whose name is registered in accordance with the provisions of this Act shall be deemed mentally defective, and every person who has, or attempts to have, carnal knowledge of any such person shall be guilty of an indictable offence accordingly.

Native Medical Practitioners in Fiji.

Suva, the centre of the South Pacific, has had a system of training native medical practitioners, but by the aid of the Rockefeller Institute this system is to be developed and extended. The problem of giving medical aid to native populations is one of method and of finance. The annual expenditure of training native doctors for Fiji and the islands in the vicinity is likely to be about £3,300; the cost of the buildings and plant is £8,000. A tutor who came from Aberdeen University has been appointed, and will take charge of the main part of the practical teaching, and Government medical men and resident scientific officers will take charge of the more specialized teaching. The course is a three-year one, and forty students, chosen by competitive examination, and young men of high intelligence and good physique, will be trained without cost to their parents. When their training is complete they will be sent to various districts and given a salary ranging from £45 to £150 a year. They also will be given quarters, and, where there is no fully qualified doctor, will be allowed the right of private practice. When the scheme has developed arrangements will be made for post-graduate training.

Ireland.

Goldsmith and Medicine.

GOLDSMITH and his connexion with the medical profession was the subject of a lecture given recently at Trinity College Medical School, Dublin, by Dr. T. P. G. Kirkpatrick, honorary lecturer in the history of medicine. There was a large attendance. The Provost was in the chair, and, in opening the proceedings, said when they were celebrating the bicentenary of Oliver Goldsmith's birth last term he did not remember that anyone had said anything about Goldsmith's connexion with medicine or of his being a medical man. He did remember an examination paper which said: "Goldsmith at once took out a medical degree, but had no practice, and never had any patients but one—and that was himself, and he nearly killed himself—the only patient he had; and after that," the writer added, "he took to literature." Goldsmith's association with the medical profession was a phase of that great man's life which Dr. Kirkpatrick would deal with. He said that Goldsmith entered Trinity College as a sizar at the age of 15 on June 11th, 1745. Both as a child and a schoolboy he was said to be dull and stupid, but the fact that at 15 years of age he had learned enough Greek and Latin to pass the entrance examination to

Trinity as a sizar did not lend much support to that view. There were no contemporary records of Goldsmith, such as they had of his contemporary and great compatriot Burke, who, though a fellow student, did not seem to have known him; nor did Goldsmith seem ever to have joined Burke in the debates of the Historical Society. That Goldsmith's life in college was miserable was unlikely from all that was known of his character. He left college with a competent knowledge of the classics, and also with a much wider knowledge of life than was usual for one who had just graduated. A man who had sold his bedclothes to shelter the derelict might well have learned more of the problems of life than the scholar whose polished periods were to procure for him a bishopric. They had not a trace of evidence that Goldsmith had any idea of following the medical profession until shortly before he set out for Edinburgh, in the autumn of 1752; nor, indeed, was there any evidence that he ever returned to Trinity College after he took his degree in 1750. Although Goldsmith had referred to the lecturers and professors in Edinburgh, he never mentioned any medical lecturer in Trinity. There was no evidence that Goldsmith, when he started the study of medicine, did not intend to become a doctor. He attended with considerable regularity lectures in Edinburgh, but it seemed strange that he should have left Edinburgh without taking a degree in medicine. At that time there was no strict curriculum or regulation for candidates seeking medical degrees, since the statute which afterwards governed such matters was not formulated till 1767. It must be remembered, however, that at Edinburgh University it was then the exception rather than the rule for students to proceed to a degree either in arts or medicine. It could not be assumed, the lecturer went on, that Goldsmith did not intend to pursue the practice of medicine because he did not seek a degree in Edinburgh, or that his studies there had not qualified him to do so. From Paris Goldsmith went to Berne, Basle, and Geneva, and thence into Northern Italy. He was reported to have spent some months in Padua, where it was suggested he took a medical degree. For this suggestion there was no evidence, nor was there any that the University of Padua granted the degree of Bachelor of Medicine at all. Having referred to Goldsmith's return from the Continent to England, Dr. Kirkpatrick went on to say that some time subsequently his old friend and fellow student at Edinburgh—Dr. Fanu Sleigh—met and assisted him to start in medical practice in a small way at Bankside, in Southwark, and that, writing in reference to this, Goldsmith said: "By a very little practice and a very little reputation as an author I made a shift to live." The little practice in medicine gave him ample time, however, for writing. Through the acquaintance with Dr. Milner, one of the most interesting episodes in Goldsmith's medical career occurred—his proposed appointment as medical officer in the East India Company at Coromandel, for which he had the more or less definite promise of an appointment at £100 a year, with the prospect of a private practice, that was believed would bring it up to £1,000. After the offer was postponed, the idea was ultimately cancelled by the Surgeons' Hall on the ground that he was not qualified. The cause of this rejection was not recorded. On March 31st, 1763, Goldsmith signed an agreement with James Dodsley, the publisher, to write a book called *A Chronological History of the Lives of Eminent Persons of Great Britain and Ireland*. In this agreement, written in his own hand, and preserved in the British Museum, Goldsmith describes himself as "Oliver Goldsmith, M.B." As far as was known this was the first occasion on which he was recorded as a bachelor in medicine, although it was not uncommon to find him referred to as "Doctor Goldsmith," or described as "Oliver Goldsmith, M.B." It was reasonable to suppose that in describing himself in an official document as "M.B." Goldsmith did so correctly, and that at that time he had, in fact, been granted that degree. The records of many universities had been searched, but in none had there been found any documentary evidence for a degree in medicine granted to Goldsmith. If it was so, he must have been granted it *in absentia*. Furthermore, it must have been given by the special grace of the board, without the performance of the usual acts. Dr. Kirkpatrick then referred to a subsequent attempt of Goldsmith to supplement his income by medical practice, and how it ended, and he concluded with a description of Goldsmith's death in 1774.

Medical Practice in the Free State.

An interesting discussion was held in Dublin on February 22nd, when Dr. J. P. Shanley read a paper on the State and medicine to a meeting of the Section of State Medicine of the Royal Academy of Medicine in Ireland. Dr. Shanley remarked that the Medical Act of 1858 did not, unfortunately, restrict the practice of medicine to those on the *Register*, and that even to-day anybody who so wished could treat cancer of the stomach with herbs, replace an alleged dislocated vertebra, "cure" diphtheria, or prescribe glasses for acute glaucoma. Indeed, in view of certain recent legal decisions, such a quack appeared to be in a safer position in the case of an action for malpraxis than a legally qualified and duly registered practitioner. The right to sue for fees was of little value, since medical men did not often wish to take this course. Dr. Shanley thought that a profession which gave so much gratuitous and unstinted service to the State deserved better treatment from it. With the coming of the national insurance scheme the State had taken a really big step forward in the control of the profession; but, while such a service might possibly be a good method of overcoming difficulties in Ireland, care would have to be taken to avoid an excess of bureaucratic interference. The control of merely medical matters should be in the hands of the medical profession. Although the Irish Public Health Council in 1920 had reported strongly in favour of a State medical service for Ireland, the Free State Government had not yet attempted to establish it; the Local Authorities Employees Act was, however, a courageous effort to abolish abuses which had prevailed under the old system of medical appointment. The president, Professor J. W. Bigger, who followed, suggested that a State medical service would benefit doctors by introducing the possibility of promotion. The selection of candidates by the local appointments commissions seemed now to be working well and to be as fair as possible. Complaints were often received from candidates, however, that they had to pay a fee on each application, and were often obliged to travel long distances for an interview; the president thought it ought to be quite possible to remedy these grievances. The ensuing discussion turned largely on possible improvements in the working of the appointments commissions. It was suggested that the various kinds of appointments might be graded, so as to make it easier to attract in each instance the most suitable type of medical practitioner, and to facilitate promotion as the reward of merit.

County Wexford Medical Practitioners.

At a recent meeting of the medical practitioners of county Wexford it was decided that the county board of health be informed that the dispensary medical officers had decided not to accept a lower fee than £6 6s. a week for locumtenent work. It was also decided that the Irish Medical Secretary should be asked to forward copies of the decision of the meeting to those doctors who were absent, for their signatures. In consequence of the repeated refusals of the health board to increase the salaries of the Enniscorthy Union medical officers of the county home the meeting decided to appeal to the Department of Local Government and Public Health to fix an increased scale by sealed order. Dr. O'Brien, surgeon to the county hospital, thanked the health board for considering the draft regulations for the treatment of private patients in the county hospital. The board's suggestion that it should arbitrate in cases of dispute between the surgeon and patient, and that the decision should be final, might work out satisfactorily, but he regretted he could not fall in with the view for the following reasons: (1) the arbitration court was not fairly constituted; (2) the members of the health board were not permanent; (3) it would not be just or loyal to his colleagues. He was prepared to adopt the draft regulations in their original form supplied by the Department of Local Government and Public Health, and thus bring to a close an unpleasant controversy.

Scotland.

Presentation to Sir Leslie Mackenzie.

AT a luncheon held in the North British Hotel, Edinburgh, on February 23rd, in honour of Sir Leslie Mackenzie and Lady Mackenzie, a portrait of Sir Leslie Mackenzie, by Mr. Henry W. Kerr, R.S.A., was presented to him. At the luncheon he was the guest of the Society of Medical Officers of Health and of the Scottish Society of School Medical Officers, and the chair was occupied by Dr. Thomas Adam, president of the former society. Dr. A. K. Chalmers, lately medical officer of health for Glasgow, proposed the health of the guest, and said that it was their desire to recognize the excellence of his work as medical member of the Board of Health for Scotland. Four movements had impressed themselves indelibly on the development of the public health services during the first quarter of the present century. Inquiries into the physical training of school children had formed a special subject of attention by Sir Leslie Mackenzie and Dr. Matthew Hay of Aberdeen, and this subject had now become the physical education of the school child, as a natural expansion of the maternity and child welfare movement. The tuberculosis movement, again, from modest beginnings towards the end of last century, had expanded in time to the institutional treatment of this disease. Venereal diseases, also, which caused much untold misery to mothers and children, had raised in an acute form the responsibility of the State as the guardian of future generations. The fourth great movement had been in relation to housing. All these movements reflected a wide change in public thought, and had become the expression of a public health conscience. With this work Sir Leslie Mackenzie had been intimately and honourably associated, and for this reason they were doing honour to his work. Sir Leslie Mackenzie, in replying, said that no meeting in Scotland could give him more profound satisfaction than one at which he met friends and colleagues, and which represented every phase and stage of his work in the public health and school health administration of Scotland. He said that in 1901 he took office as the first medical inspector under the Local Government Board, and he proceeded to comment on the special movements that had been inaugurated during his period of service. In 1906, he said, they had hardly a single bed for tuberculosis, and to-day the accommodation for these patients approached 5,000. The Royal Commission on Physical Training had appointed Professor Matthew Hay and himself to examine 1,200 school children, of whom 600 were in Edinburgh and 600 in Aberdeen. From this narrow sample he had felt justified in concluding that nothing short of systematic medical inspection gave any hope of improvement, and he made that recommendation explicit in his report. In 1903 the Houses of Parliament had declared strongly in favour of medical inspection, and for three years he had spent a great deal of his time in lecturing upon this subject. The medical profession were not at first favourable, but the younger generation saw that they had at last succeeded in bringing clinical medicine on to the preventive plane. The true initiative in establishing medical inspection rested with the late Sir Henry Craik, and to him, as well as to Sir John Struthers, his successor, and Sir George Macdonald, we owed the splendid system that held within it so many active minds at the present time. Twenty-five years ago everyone was speaking of infant mortality, and to-day people spoke of child health or child welfare and maternity service. Here also he had had an opportunity of playing a certain part. In the year 1915–16 he was asked by the Carnegie Trustees to prepare the Scottish Report on Scottish Mothers and Children. It was gratifying to find that after twelve years the report was still asked for; it had circulated largely in America, and he knew that many workers had found it of some value. The Royal Commission on Housing, known as the Ballantyne Commission, was, he thought, the most important that had sat in Scotland for over a hundred years. The late Mr. Gillespie and he had drafted a clause applying the conception of a nuisance clause under the Public Health Act to the provision of housing, and this became the fundamental proposition in the 1919 Housing Acts of England and Scotland. The result to-day had been that in England there were, he believed, nearly 1,000,000 new houses, and in Scotland the first 100,000 houses were safely on the way to erection. This social revolution had centred on the point that the local authorities had been obliged first to survey their districts by seeing that the people were properly housed, and secondly to provide houses. Speaking of the civil service, he said that it was constantly subjected to attack, but although no one pretended that the service was perfect, he had been convinced by twenty-seven years as a member of it that it was in a thousand ways a magnificent service. Lady Mackenzie also received a presentation, for which she briefly expressed her thanks.

Glasgow Royal Asylum.

The annual meeting of contributors to the Glasgow Royal Asylum was held on February 21st, with the Lord Provost, Sir David Mason, in the chair. The physician-superintendent, Dr. D. K. Henderson, in his annual report, stated that the total number of patients under treatment during the past year had been 653, including 135 new admissions. Of the 117 patients who had been discharged, 45 had recovered. The death rate had been 4.7 per cent. of the average number resident. The voluntary form of admission was being more widely utilized, as shown by the fact that 68 of the patients admitted entered the asylum in this way. Dr. Henderson, in drawing attention to some of the social implications of mental disease, pointed out that the 1927 report of the General Board of Control for Scotland showed that there was one certified mental patient to every 264 of the population. If to this figure was added the number of voluntary patients, of mental defectives, and of criminals in whom mental disorder and defect were present, a still better idea of the significance of mental illness to the health of the community was obtained. This problem was becoming more insistent because there was a steady increase in the numbers requiring institutional care, and the problem had now become one of prevention. Twenty years ago it was reckoned that 40 per cent. of the admissions to mental hospitals were directly or indirectly due to alcohol or syphilis, but this was hardly true to-day, for there had been a notable decrease in both these causes, and the public was gradually evolving a better moral standard in regard to them. The problem to be faced now was more social than medical. The common factor in the associated problems was that they had to deal with unstable, difficult, ill-balanced personalities, and investigation showed that such maladjustments had their beginning not late in life, but in infancy or adolescence. In the past the worst cases had been segregated in institutions, the less gross were educated in special schools, and in addition there was the much more difficult problem of making provision for and helping those whose defects were not due so much to hereditary influences as to unhealthy environment. The establishment of child clinics, which had taken place already to a considerable extent in the United States, was very important in relation to this matter. The purpose of such clinics was the individual study and treatment of children who were failing to adapt themselves to any aspect of life. Here the aim should be to develop agencies and clinics whereby touch could be established with such children before their habits became set. Such an organization demanded a staff of psychiatrists, psychologists, and social workers to deal with patients in their own homes. To a certain extent this need was already met by psychiatric out-patient departments attached to general hospitals, but these departments were not yet sufficiently organized to take the place they ought to take in the life of the community. The Lord Provost, in moving the adoption of the report, said that if the advantages of the voluntary system of admission were better recognized there would be fewer cases of chronic insanity, and Colonel J. A. Roxburgh, in seconding, said that the directors of the institution were anxious that the public should regard it no longer as a place of detention, but as a place of cure.

Western Infirmary, Glasgow.

At the annual meeting of contributors to Glasgow Western Infirmary, held on February 22nd, the Lord Provost, Sir David Mason, announced that a gift of £5,000 had recently been received by the Infirmary from Sir Henry and Lady Mechan, for the purpose of purchasing radium for the early treatment of cancer. In drawing attention to the deficit on the year's working of over £12,000, which was due largely to the increased number of patients treated, the chairman suggested that there was room for improvement in the subscriptions given by some of the warehouses, shops, and offices in the city. He also pointed to the fact that during the year 300 cases of motor accidents had been dealt with in the Infirmary, and he saw no mention in the report of any contribution from persons treated on account of these accidents. Colonel John A. Roxburgh, in seconding the report, said that they would be glad to see the gap between ordinary income and ordinary expenditure filled up, although the financial position of the Infirmary was still satisfactory. He referred to the rapidly increasing scope of radium therapy and the encouraging results which were being obtained in certain cases of malignant disease, which made the recent gift of radium to this hospital highly acceptable. Research work on cancer had been carried out in the laboratory of the Infirmary through the benefaction of the Robert Donald Trust, and the radium would be under the charge of the Donald Research Scholar for Cancer, Dr. A. A. Charteris, who was making a special study of this form of treatment. It was not proposed to limit the benefits which would accrue under this scheme to hospital patients only, and any of the radium which was not in use in the Western Infirmary would be available to the hospital staff, by special arrangement, for the treatment of private patients.

Leith Hospital.

At the annual meeting of Leith Hospital an appeal was made by the chairman, Mr. John A. Lindsay, for a supply of radium, which was urgently needed for the treatment of certain cases of a grave or hopeless nature. He also stated that it was desirable to take advantage of the reconstruction that was at present going on in the vicinity of the institution to secure adjoining ground so that there might be more air space round the hospital. Mr. Ernest Brown, M.P., in seconding the report, said that it would be a mistake to suppose that because a greater concentration of the public health services was taking place at the present time, there would not be as much need for private and individual work in connexion with hospitals, such as Leith Hospital, in the future. With the inauguration of new efforts there would be more scope for the work of voluntary hospitals as time went on.

Red Cross Work in Edinburgh.

The annual meeting of the Edinburgh Branch of the British Red Cross Society was held on February 28th. Lord Provost Sir Alexander Stevenson presided. The chairman remarked that there had been an excellent record of beneficent work performed by the Red Cross since the war as well as during the war years. Its members, drawn from all classes, had performed deeds of bravery and unselfishness which commanded the admiration of the world, but even in time of peace the Red Cross Society had a great work to do. With regard to the society's work on behalf of the miners' fund, he said that they had reached no less a sum than £31,000, and it had been a great satisfaction to him that the Red Cross Society had formed a depot to receive gifts of clothing from which about 27,000 articles had been distributed. The county director's report showed that enrolments of members for the Voluntary Aid Detachments continued to progress. In Edinburgh the membership now consisted of 120 mobile members, 122 immobile members, and 37 probationers, who displayed a satisfactory standard of efficiency on examination. It was stated that during the recent influenza epidemic the Scottish nursing service would have been defeated in its work if it had not been for the great assistance given by members of the Red Cross.

Central Midwives Board.

At a meeting of the Central Midwives Board for Scotland, held for the election of the office-bearers, Dr. James Haig Ferguson (Edinburgh) was unanimously re-elected chairman, and Dr. Robert Cochrane Buist (Dundee) was re-elected deputy-chairman. The meeting appointed other committees, and also examiners for the ensuing year, and approved and revised, subject to inspection by the board, institutions applying for recognition under the new regulations, with the teachers attached thereto, for the training of midwifery nurses.

Correspondence.

VOLUNTARY HOSPITALS IN SCOTLAND.

SIR,—The report in your issue of March 2nd (p. 413) of the meeting of the Scottish Regional Committee of the British Hospitals Association calls for some comment, as it does not represent the actual position of matters. To enable this to be done the following facts must be kept in view.

In 1927 the central office of the British Hospitals Association sent to the Scottish Regional Committee a series of inquiries, asking for their opinion on them. A meeting was held in October, 1927, for the consideration of these inquiries, but they were never discussed. The Regional Committee decided to set up local committees in the five regions of Scotland, who should explore the needs of their respective areas and consider the possibility of co-operation between the statutory authorities and the voluntary hospitals. Further, it decided to approach the Secretary of State for Scotland, asking him to receive a deputation of representatives of the leading hospitals to discuss the position and ask for his view on the lines along which the hospitals authorities should proceed in co-operation. It was also resolved that another meeting of the Regional Committee should be held in Glasgow to receive and consider the report of the deputation to the Secretary for Scotland.

The Secretary for Scotland agreed to receive the deputation on December 9th, 1927. This meeting took place, and at it the Secretary for Scotland appointed a Liaison Committee to be a channel of communication between himself and the voluntary hospitals, the Liaison Committee to ascertain the views of the voluntary hospitals in the respective areas that the committee represented.

Although it had been decided at the meeting in October, 1927, that another meeting of the Regional Committee should be held in Glasgow, to receive the report of the deputation to the Secretary for Scotland, this meeting was not held until February 29th, 1928. At this meeting it transpired that the Liaison Committee had never taken any steps to ascertain the views of the voluntary hospitals in their respective areas on the changes proposed in the Local Government (Scotland) Bill. What, apparently, it had done since its formation was to assume executive powers, and, as one of its members stated, "to be actively engaged in drafting proposals for the Local Government (Scotland) Bill"; and this was done without consulting the voluntary hospitals in their respective areas. The outcome of this has been that a clause, drafted by the Liaison Committee after subsequent meetings with the Scottish Health Department, and intended to safeguard the interests of the voluntary hospitals in any co-operation with the municipal hospitals, was not accepted. It might have been different had the committee had behind it the weight of the opinion of the voluntary hospitals; and, from the report in your columns, one of the members of the Liaison Committee now admits that the Liaison Committee in the role it has assumed "could be effective only if it had behind it an informed body of opinion." Not having this, the result was bound to be what has taken place, and the whole question of the relationship between the statutory authorities and the voluntary hospitals has been decided, not on the views of the latter, but on the opinions of the individual members of the Liaison Committee.

It is only right that the medical profession in Scotland should know exactly what has happened, and what has brought it about. Already there has appeared in Glasgow a protest against what has occurred, and the Scottish Regional Committee at its last meeting passed a mild censure on the Liaison Committee when it pointed out that "it would be desirable to have the views of the areas co-ordinated before they went forward to the Liaison Committee, for it would be unfortunate if different views were put forward from the various areas on any particular subject."

At the recent meeting of the Scottish Regional Committee it was thought that the Regional Committee of the British Hospitals Association was the best body to concentrate the opinions of the voluntary hospitals, and it is quite clear that the Scottish Regional Committee is being used as a stalking horse to shelter this attempt to gain control over the voluntary hospitals in Scotland. Such a role is not the function of the British Hospitals Association; it was established to consider *questions in connexion with the management of the hospitals*, but it was not intended to have any say in what would be called *hospital policy*.

One unfortunate outcome of these efforts of various bodies to be the dominant factor in controlling the voluntary hospitals is to undermine the voluntary principle in connexion with hospitals services, and to weaken it instead of strengthening it. What is really needed is an independent central body elected by the voluntary hospitals themselves, and representative of their views.—I am, etc.,

Glasgow, March 4th. GEORGE THOS. BEATSON.

THE AFTER-EFFECTS OF RADIUM TREATMENT.

SIR,—The following account of the after-effects of radium therapy in patients treated by me at the Christchurch Hospital and privately is given in the hope that it may stimulate other workers to report their own experience of mishaps that may follow this form of treatment. It is a subject on which I am often asked questions by my colleagues in New Zealand.

Untoward sequels of radium treatment may be divided into excessive skin reactions, fibrosis of deep tissues, increased pain, and mental or psychical changes. An overdose of radium used externally may be followed by telangiectasis, scarring, and loss of hair, but these should not occur with ordinary care, and are no longer seen in the *x*-ray clinic. Telangiectasis may be unsightly, but if a malignant growth has been destroyed the scarring is a small disability compared with the destruction that would have occurred if no treatment had been used. It has been stated that treatment with radium or *x* rays before operation may embarrass the surgeon by formation of fibrous tissue, but as this treatment should only be given a few days before operation the difficulty should not arise.

My follow-up reports give no indication that increase in pain occurs in the majority of cases after radium treatment. Certainly in external cancer the patients often tell me that the pain has been absent after the first application, but in uterine cases I have records of pain occurring in the hips, groin, back of leg, and in the lumbar spine. All these cases have been re-examined, and my notes show that pain had been present before the use of radium, and pelvic or *x*-ray examination showed metastasis in the soft tissues or bone.

The mental after-effects of radium are at present undetermined, and I can find no statement about them in the literature. Experiments by Horsley and Finzi on the effect of radium applied directly to the brain tissues in animals showed vascular changes, but no change in the neuroglia or nerve cells. The conclusion drawn was that the nerve tissue was relatively insensitive, and that vascular disturbance accounted for nerve derangement after the application of radium.

An elderly man was sent to me for treatment of a huge crater ulcer on the right parietal area. The whole of the bone beneath the crater had been destroyed, and the brain was visible. With much hesitation I buried radium round the edges of the ulcer for twenty-four hours, and some weeks later I found that the growth was apparently arrested. No complaint of headache was made, and no nerve symptoms ensued. I have had two other cases in which the bone over the brain was thinned out and the growth was treated with buried needles without any cerebral symptoms following.

In contrast an elderly patient came for treatment with a small papilloma and a small patch of keratosis on the side of the forehead. These were treated simultaneously with a radium plaque applied over a piece of lead rubber, in which holes had been cut to expose the two areas. Both lesions disappeared after one treatment of ninety minutes. About six weeks later I heard that the patient had developed aphasia, which lasted about a fortnight. I was asked if this might be due to the radium, and expressed the view that it was merely a coincidence.

During the same month I was asked to treat a middle-aged lady for menorrhagia. The patient did not come for treatment, and a few hours later her medical attendant telephoned to say that she had had a "stroke." Had the stroke occurred after the introduction of radium the treatment would inevitably have been held responsible.

In this hospital and in private practice I have treated 66 patients for malignant disease of the uterus, 68 for menorrhagia, and 7 for fibroids. Every case has been carefully followed up, and two of the menorrhagic cases have been reported as suffering from mental symptoms. The superintendent of the neighbouring mental hospital, to whom I referred the question, stated that he had no record of any case in which radium was suspected as being the cause of mental breakdown.

I think that the extraordinary success of radium treatment in the uterine haemorrhage of middle life must be due to the action of the gamma rays upon the ovarian tissue, causing a practical castration. I can see no other explanation why long-standing haemorrhage should cease with such dramatic swiftness. Does this radium castration prove more dangerous mentally to the patient than oophorectomy or than the slower atrophy of age? In males the operation of vasectomy in cases where patients were unable to undergo prostatectomy was supposed to be followed by rapid senile decay. Prior to 1914 I had performed vasectomy on a number of old men who were unfit for operation, but in no case did senility follow. Castration in young males does not apparently damage the mental powers. The history of eunuchs who rose to political prominence in the Eastern empires suggests that a castrated male is not below the average in brain power.

For the treatment of menorrhagia we use as a routine dose 50 mg. of radium element in platinum tubes (wall thickness 1 mm.) enclosed in rubber drainage tubes 1 mm. thick, and placed in the uterus for twenty-four hours, the total dose being 1,200 milligram hours. We have not yet had a case in which the haemorrhage did not cease. Every patient is warned that menopausal symptoms will occur, and my follow-up reports show that all experienced hot flushes, sweating, headaches, etc.

I am unable to say whether these symptoms are more pronounced in radium patients than in women passing through the normal climacteric, but the fact that two patients treated for menorrhagia have developed mental symptoms makes me anxious to learn from other radium workers if they have similar records. I would feel sorry to refuse treatment to a woman suffering from violent long-continued haemorrhage for fear that the treatment may be followed by mental catastrophe, and it would be a satisfaction if the experience of other hospitals in this matter could be obtained.

It is known that surgical operations on the uterus and ovaries may be followed by mental breakdown; I have seen insanity follow hysterectomy. In other regions surgery has been blamed for mental troubles. Recently a patient under my observation committed suicide after operation for hyperthyroidism, yet it would be incorrect to quote this as the result of a skilfully performed operation.

I have always been averse to using intrauterine radium applications in any but middle-aged women. In two cases recently I consented to use this treatment in women under 30 suffering from severe and long-continued haemorrhage that medical treatment and curetting had failed to relieve, but I gave only one-third of the routine dose. Sufficient time has not elapsed since treatment to report whether normal menstruation has reappeared.

I have so far declined to use radium for dysmenorrhoea, but I think that if the patient is going downhill into chronic invalidism it might be justifiable to use a small dose of radium in the hope that temporary cessation of the painful periods would be followed by a normal flow. I am

aware that many of these cases are of nervous origin, but, even so, temporary relief might be the means of regaining normal mental balance.—I am, etc.,

P. CLENNELL FENWICK,
Officer in charge, Radium and Deep Therapy Department, Christchurch Hospital.

Christchurch, New Zealand.

LOCAL ANAESTHESIA IN OPERATIONS FOR HAEMORRHOIDS.

SIR,—Dr. T. H. T. Barber's communication published on March 2nd (p. 397) will help to dispel the widespread but very antiquated belief that the removal of piles is followed by days of such pain and discomfort that the ordeal is scarcely worth while. Under modern conditions the operation is one of the most gratifying and satisfactory in surgery; the much-dreaded after-pain and discomfort have been reduced to a minimum, and, in fact, have been rendered quite negligible. The only criticism I venture to offer to Mr. Barber's remarks is that he did not sufficiently emphasize the practical simplicity of his own admirable recommendations.

I have employed local anaesthesia for the removal of piles for the last twenty years; 1/2 per cent. novocain solution, to which adrenaline (supplied in ampoules) is added, is usually at hand and acts as perfectly as more complicated preparations. The skin round the anal orifice is very thin and if a fine dental needle is used the whole circumference of this area can be anaesthetized in five minutes without the knowledge of the patient. Deep infiltration is unnecessary. The sphincter becomes gradually relaxed; it should not be forcibly stretched. I have come to regard stretching of the sphincter, no matter how thoroughly, as one of the causes of after-pain and one of the determining factors in producing transient retention of urine. A triangular mosquito forceps applied to the anaesthetized skin provides a traction handle for the extrusion of the pile-bearing area.

I am not wedded to any particular form of operation, but I rather favour a modification of the much-maligned Whitehead method. Modern technique has made it a safe and satisfactory procedure, when the indications are present. With local anaesthesia it is seldom necessary to ligature or clip a single vessel during the preliminary dissection. After removal of the pile-bearing area on each side the sutures are introduced in the manner recommended by Mitchell. A well-trained sister and a Reverdin's needle expedite this part of the procedure. Great care is taken to bring skin and mucous membrane neatly in line. The external sphincter is visualized without difficulty, especially if a head light is used. No skin is removed. The line of suture is smeared over with bipp and a generous dressing of sterilized vaseline applied. A tube is inserted, but in a few cases owing to discomfort needs early removal.

Local anaesthesia, asepsis, and accurate suturing have placed the operation for removal of piles in the realm of minor surgery. I have under my care at the moment a patient who told me that for ten years he had abandoned all his favourite outdoor recreations owing to trouble from piles; he was urged not to face an operation with its aftermath of torture. He now knows better, and during convalescence hopes to square accounts with his persuasive but deluded friends.—I am, etc.,

Dublin, March 3rd. W. I. DE C. WHEELER.

SIR,—I can thoroughly endorse Dr. T. H. T. Barber's plea in the *Journal* of March 2nd for the use of local anaesthesia in operations for haemorrhoids and anal fissure. One very great advantage of local anaesthesia is the absence of post-anaesthetic vomiting, which, after general anaesthesia, is a common cause of perianal swelling and oedema.

Dr. Barber describes a technique in which the anal canal is anaesthetized by novocain applied on pledgets of cotton-wool, then a series of subcutaneous perianal injections is given, and finally an infiltration of the sphincter muscle by six or seven injections. In all he appears to puncture the skin about twelve to fifteen times. I can recommend the following technique as being simpler, very rapid in its action, and one which avoids distortion of tissues in the operation area.

The solution is a 1 per cent. solution of novocain (1½ oz.) to which 6 drops of adrenaline (1 in 1,000) are added immediately before use. With the patient lying on his right side and the knees well drawn up, a wheal is raised in the middle line one inch behind the anus. Next, using a 10 c.cm. syringe and a two-inch No. 20 Record needle, and with the left forefinger in the rectum, 10 c.cm. of the solution is injected deeply in the middle line posterior to the rectum. The solution is slowly injected as the needle is advanced. The syringe is then refilled, and 10 c.cm. is injected deeply into the sphincter on the left side; the left forefinger puts the sphincter on the stretch, and the solution is injected as far forwards as the two-inch needle permits. This point in practice is level with the anterior margin of the anus, or even slightly beyond it. The right side of the sphincter is treated in a similar manner, 30 c.cm. of the solution being used in all. The entire injection can be done rapidly through the single point of puncture posteriorly. The anaesthesia develops immediately; the patient can be placed at once in the lithotomy position, and the operation proceeded with. Complete relaxation of the sphincter is obtained, and a perfect anaesthesia for any local operation can be relied upon. In some cases, if a large external pile needs removal anteriorly, a few extra drops of anaesthetic solution may be injected subcutaneously in front of the anus.

I have used this method as a routine for all pile and fissure cases, and have found it useful for other local conditions. There have been no complications, post-operative pain has not been marked, and the patients have invariably been grateful for the employment of this type of anaesthesia. Furthermore, it renders radical operation possible and safe in subjects who, from age or intercurrent conditions, would otherwise be debarred from operation.—I am, etc.,

London, W.1, March 4th. W. B. GABRIEL.

VACCINATION IN THE LIGHT OF RECENT EXPERIENCE.

SIR,—There may or may not be confusion in the statistics coming from Northern Rhodesia and other countries, but the very definite statement was made in the *Monthly Epidemiological Report* (February 15th, 1928), issued by the League of Nations, that "small-pox of severe type appeared in June, 1927, in Northern Rhodesia, where ordinarily only the mild Kaffir-pox is met with," and certain figures were given. But it was not stated whether the Kaffir-pox had disappeared or whether it still continued side by side with the severe form. My letter in the *Journal* of February 16th (p. 319) was written in the hope that more information on the nature of small-pox in Rhodesia would be forthcoming. Meanwhile it is interesting to note that there has been a revival of small-pox, of moderately severe form, in Northern Rhodesia. In the *Times* of February 9th there is a quotation from the weekly bulletin of the Health Section of the League of Nations for February 8th, in which it is stated that "small-pox is widespread in Northern Rhodesia, 4,235 cases with 301 deaths having been reported since the beginning of the year." It is surely worth while to investigate the behaviour of a disease which, in the course of a little over two years, presents a varying fatality rate, which, beginning at 3 per cent., rises suddenly to 20 per cent., dies down to 5 per cent., and again rises to 7 per cent. at the end of the period.

I think Dr. Garrow has misunderstood the object of my suggested test. I agree with him that "it is reasonable to suppose that small-pox and alastrim would confer immunity against each other"; that is, if alastrim is a variant of small-pox. But if alastrim is quite a different disease from small-pox, then it is reasonable to suppose that the one will not protect against the other.—I am, etc.,

Hemingford Abbots, March 3rd. E. W. GOODALL.

A NEW METHOD OF APPROACH IN GASTRIC SURGERY.

SIR,—I feel that the statements made by Mr. Digby Chamberlain (February 23rd, p. 343) under the above heading call for some comment from the radiologist's point of view. Mr. Chamberlain describes the reduction of two inoperable cases of carcinoma of the stomach to operable dimensions by a large single dose of *x* rays. The rays were applied directly to the tumour at the exploratory operation, the object being to avoid damage to the skin.

It is unfortunate that Mr. Chamberlain has not given radiologists more definite guidance in the matter of dosage. All that he says is that deep x rays were applied in one case for forty, and in the other for thirty, minutes. He does not state the focal distance, the milliamperage, the secondary voltage (minimum wave-length), or the filtration. Nor does he give any quantitative measurement of the dose in recognized units, such as X, H, the French R, or the German R. It is hardly an exaggeration to say that to state the dose in terms of time alone is just as inadequate as it would be to express the dose of morphine according to the number of seconds occupied in its injection.

Since, however, Mr. Chamberlain uses the word "deep" it may be presumed that he means a voltage of at least 150 kV filtered through at least 0.5 mm. Cu., and his main contention is that the dose which was administered could not have been applied transcutaneously without the risk of damage to the skin. Now under these conditions, using a double coil with a focal distance of 28 cm., the tube giving 2 ma. (the usual output over a long period), thirty-five minutes gives approximately 16X, a dose which, at this filtration, causes a barely perceptible erythema, if any. The exposure can be prolonged considerably further before the skin is seriously damaged. It is therefore very doubtful whether the risk of damage to the skin is as great as Mr. Chamberlain fears, and whether he has gained anything by avoiding the transcutaneous route.

Moreover, by this method only one portal of entry is, from the nature of the case, possible, whereas by the ordinary method several may be used. But Mr. Chamberlain has no use for the cross-fire method. He states that "experience shows that one big dose is considerably more efficacious than a number of smaller applications applied to the growth at intervals by the cross-fire method." Here Mr. Chamberlain is confusing two things—(1) the use of several portals of entry at one sitting or on consecutive days, (2) the repetition of the dose at intervals. As regards the first point the advantage of the cross-fire method is not a mere matter of opinion, but is a fact capable of mathematical determination in terms of quanta of energy, and of experimental proof by means of the iontoquantimeter. As regards the second point, the confident statement that the single dose is superior to the repeated dose may represent Mr. Chamberlain's experience as a surgeon, but it is one which the great majority of radiologists will regard as at least very much open to question.

As a matter of fact, radiotherapy after "exteriorization" of the stomach has been practised by Finsterer in 19, and by Werner in 48, cases, and in spite of one case of apparent disappearance of the tumour recorded by the latter it has never been demonstrated that this procedure is superior to the ordinary method.

Cases of gastric carcinoma are so distressing that the appearance of any new and promising method is welcome, and no one would wish to grudge Mr. Chamberlain his success in his two cases. At the same time, one cannot help feeling that real advance in this subject can only be born of clear thinking and accurate measurement.—I am, etc.,

Cambridge, Feb. 28th. FF. ROBERTS, M.D., M.R.C.P.

THE CIRCULATION UNDER THE SPHYGMOMANOMETER CUFF.

SIR,—Dr. Harrington Sainsbury and I seem agreed that the blood is a colloid and incompressible, but we are not agreed that the five inches of the brachial artery under the cuff remain full under a pressure sufficient to obliterate the pulse at the wrist. If the pressure in the cuff be quickly raised, as it usually is, and should be, the pressure soon exceeds that of the blood in the artery, and the blood, being a liquid, is bound to move on to a lower pressure level. No doubt when the pressure is reduced so as to give the systolic and diastolic pressures, the artery fills up; that this filling up is a gradual process is shown by the movement of the lever from the systolic to the diastolic pressure. As to the effect of a rigid artery in apparently raising the blood pressure, this would no doubt occur with a perfectly rigid artery, but it would be difficult to find five consecutive inches of a brachial artery perfectly rigid, and the strength of a chain is its weakest link. Therefore I do not wish to dispute Dr. Sainsbury's contention on this point.

Dr. Leonard Hill's article is extremely interesting, but personally I do not see what it has to do with the fullness or otherwise of the brachial artery under the sphygmomanometer cuff. I am well aware that of recent years Dr. Hill's views on the capillary circulation have performed a complete *volte-face* from the time when he said that in the inverted body the pressure in the cerebral capillaries might amount to 100 mm. of mercury. He has for some years raised the capillary endothelium to the high level of a secretory structure, as Heidenhain had done before him. He has never succeeded in proving his own contention nor in abolishing the effects of capillary pressure. Even now he acknowledges that, "how living cells secrete into and absorb from the circumambient medium we do not know."

Every morning I douche out my nose with a saline solution; the secretion stimulated by the saline quickly stops, but when I lower my head six to twelve inches or more there is a rapid excretion of a limpid fluid rushing out in drops. I fail to account for this in any other way than the increase in capillary pressure which undoubtedly takes place.—I am, etc.,

Cannes, Feb. 25th. JAMES BARR.

THE INTRACUTANEOUS TUBERCULIN TEST.

SIR,—From the figures quoted by Professor Lyle Cummins on February 23rd (p. 336) the following conclusions might be drawn: (1) The vast majority of persons will react to 1/10 c.cm. of a 1 in 1,000 dilution, irrespective of whether they are tuberculous or not. (2) A lesser number will react to 1/10 c.cm. of a 1 in 5,000 or 1 in 10,000 dilution. On the whole, healthy persons are more likely to show this extreme degree of sensitivity than persons suffering from clinical tuberculosis, but a sufficiently large number of the latter group react to make the distinction valueless.

My own observations on the test are at present on a very small scale; but so far as they go they have been carried out carefully, and the results are more or less in harmony with those obtained by other observers with the same and with analogous tests. They are so strikingly at variance with those of Professor Cummins that I quote some of my results.

Results in 120 Cases (110 Adults) Tested with 1/10 c.cm. 1 in 1,000 T.A.F. Intradermally.

Group.	Cases.					
I. Pulmonary tuberculosis (sputum T.B.+)	25	...	15	pos.,	10	neg.
II. Non-pulmonary tuberculosis	7	...	7	,,	0	,,
III. Early tuberculosis (bacilli not found) ...	48	...	42	,,	6	,,
IV. Clinically free from tuberculosis ...	40	...	6	,,	34	,,
	120					

With regard to the cases in Group III, the diagnosis has not been confirmed by the demonstration of tubercle bacilli or by other evidence which would be regarded as unequivocal; Professor Cummins may reply that some of these cases should be included in Group IV. While I should not be prepared to admit this, I would point out that even the amalgamation of Groups III and IV would only give 55 per cent. positives against Professor Cummins's 93 per cent. among healthy persons (I am not sure how many persons would be considered to constitute 93 per cent. of a total of 46).

Moreover, I found that those clinically positive patients (Group I) who reacted were all patients with active disease in whom one felt that the prognosis was poor. My chronic patients who had returned from a beneficial course of sanatorium treatment, etc., were usually negative (and, incidentally, in some cases negative to 1/10 c.cm. 1 in 100). This observation also appears to be at variance with that of Professor Cummins; but it seems more in harmony with the fact that a person who has had a successful course of therapeutic tuberculin will give a negative reaction. If tuberculin tolerance confers any degree of tubercle-toxin tolerance the converse will likewise hold.

To my mind the most striking feature about Professor Lyle Cummins's work is the constantly high number of

positive reactions obtained in every test, irrespective of the type of person tested. My own conclusions may not be correct, but the comparative frequency with which I obtained negative reactions suggests that there may be some factor to explain the extraordinary discrepancy between his results and mine. I note that he employed old tuberculin; now old tuberculin contains glycerin, which is itself an irritant to sensitive skins; I invariably used T.A.F. (prepared by Meister Lucius), which is said to be free from glycerin and toxic albumoses. Moreover, there may be lack of agreement as to what constitutes a positive reaction. About twenty-four to thirty-six hours after testing a red flush may be seen at the site of inoculation; this does not, by itself, constitute a positive reaction. About the third or fourth day, in positive cases, a hard nodular swelling appears beneath the skin and is of maximum intensity about the sixth day. The redness may have disappeared by this time, but the nodule persists for fourteen days or more, and it is this nodule which is characteristic of a true positive reaction. It has been my practice to see patients a week after testing, and I do not regard a reaction as positive unless I can feel the nodule. I do not attach any significance to a mere redness appearing shortly after inoculation. These factors may to some extent explain the discrepancy between Professor Cummins's results and my own, but it seems unlikely that they can account for the whole difference. I fear that the truth is that the series tested is, in each case, too small to justify the drawing of definite conclusions. I would suggest, however, that a positive or negative reaction to tuberculin may be accounted for by one of many factors.

1. A negative reaction may be due to the fact that the person is uninfected.

2. A negative reaction may be due to anergy; this is seen in very advanced cases, and the diagnosis will be apparent without the employment of a tuberculin test.

3. A negative reaction may be due to high tolerance. This is seen (*a*) in persons who have had a successful course of therapeutic tuberculin; (*b*) in chronic tuberculous persons who have successfully fought the disease (that is, sanatorium treatment may produce a degree of tubercle-toxin tolerance which corresponds to tuberculin tolerance); (*c*) healthy persons who have developed high tolerance as a result of frequent "latent infections" which have been successfully resisted without the development of clinical tuberculosis.

4. A positive reaction indicates high sensitivity, and may be seen in a variety of phases. It always indicates "infection," and usually infection in an active state. It occurs in a high proportion of persons suffering from active disease, but who are not anergic; it appears in a high proportion of persons suffering from very early disease who have not yet developed tolerance; it develops at some time during the lifetime of a large number of healthy persons who have recently had "a dose of infection" and whose systems have not yet established a "state of equilibrium." A great many of these "healthy reactors" may never develop clinical tuberculosis, but it is impossible to predict this with certainty in an individual case.

(It will be understood that I am referring to reactions to test doses. All infected persons would react positively to a dose of tuberculin of sufficient potency.)

A fuller account of my observations will be found in the *Transactions of the Assurance Medical Society* for February, 1929, together with a review of the literature on the intracutaneous and other local tuberculin tests.

Professor Lyle Cummins remarks at the beginning of his article that an intradermal dose produces a local reaction and no appreciable general or focal response. Yet in his concluding paragraph he makes the surprising suggestion that this method should commend itself to those using tuberculin therapeutically.—I am, etc.,

London, W.1, Feb. 23rd. T. WARWICK PRESTON, M.D.

References dealing with the Intracutaneous Tuberculin Test.

1. Bass: *Amer. Journ. Dis. Child.*, 1918, p. 313.
2. Burhans: *Journ. Amer. Med. Assoc.*, 1927, p. 1299.
3. Forbes and Green: *Arch. Pediat.*, November, 1926, p. 736.
4. Luker: *Med. Journ. of Australia*, June 12th, 1920, p. 548.
5. Mantoux: *Académie des Sciences*, 1908.
6. Smith: *Trans. Amer. Pediat. Soc.*, 1926.

References dealing with other Local Tuberculin Tests.

1. Ellis, H. A.: *Lancet*, 1916, ii, p. 638.
2. Erlandsen and Petersen: Quoted by Riviere (8).
3. Gunter, F. E.: *Tuberculin in Practice*, 1928.
4. Hamman and Wolman: *Tuberculin in Diagnosis and Treatment*, 1912.
5. Krumbhaar and Musser: *Amer. Journ. Med. Sci.*, 1914, i, 540.
6. Morland, E.: *Lancet*, 1912, ii, p. 638.
7. Riviere, Clive: *Early Diagnosis of Tubercle*, 1912.
8. Wolff-Eisner: 1909.

SIR,—For more than thirty-eight years I have been studying the phenomena caused by hypodermic and even intravenous injections of tuberculin in every sort of chronic tuberculosis, and in the last few years I have been personally studying the effects of what I prefer to call intracutaneous or intracuticular (rather than intradermal) injections of tuberculin; at a low estimate I have made many more than 50,000 injections of all kinds. In all my early observations I carried out personally all the necessary laboratory and clinical work; I examined every sputum, and made all the bacteriological investigations upon mixed infections with my own hands.

I think that team work is not always trustworthy, and may easily lead to error, because correct observations, even upon the character of skin lesions, may require some special training and experience. Certainly, if assistants cannot be trusted to measure the doses of tuberculin for themselves, they are not likely to be versed in the technique of the administration of intracutaneous doses. Some knowledge of technique is necessary before one can rely on the effects of the intracutaneous injections of minute doses. I should not be inclined to draw conclusions from the results of intracutaneous injections of small doses of tuberculin given by a group of assistants. There are numbers of errors which may creep in *à la dérobée* at different stages of the proceedings. Accordingly I must ask medical men not to be impressed by the casual observations made by a few juniors and then summarized in statistical form. I am too jealous for the reputation of tuberculin to allow Professor Lyle Cummins's contribution (February 23rd, p. 336) to pass without a severe criticism of the "bricks and mortar" that form the basis of his statistical analysis. To appraise the merits or demerits of any new system one must be sure that the evidence comes from those who have had some considerable experience in this highly delicate field of inquiry.

Why Professor Cummins should select B. W. preparations in preference to the preparations known as Koch's T.A. and T.A.F., which are recognized all over the world as the standard of tuberculin of this type, he himself must explain. The choice of the testing reagent in such an investigation is of prime importance, and personally I should discount the value of experiments with this particular preparation.

If doses are reduced to 1 in 10,000 and 1 in 5,000 the borderline is reached when effects due to unskilled injection may be attributed to the innocent dose. I have confined myself to observations with 1 in 1,000 dilutions, and my conclusions are in entire disagreement with those of Professor Cummins. I should have imagined that the fact that healthy persons gave more severe reactions than the tuberculous would have aroused his critical faculty. Moreover, the only description of the reaction is one of linear measurement. I have never heard that reactions to tuberculin could be measured merely in centimetres.

Again, Professor Cummins's assistants were warned that diluted tuberculin is liable to deteriorate. My own experience is that this rapid deterioration is due to faulty technique—mainly contamination. I am well aware that Koch originally pointed out this fact, but I found out that strict technique removed this tendency.

Lastly, Professor Cummins is still obsessed with the phantasm of danger which Koch designated "thöricht." I have used tuberculin openly at the Sydney University for ten years, and since then in London for another twenty years, and all my pupils would vindicate my view that tuberculin used by an expert in proper doses never does any harm. Yet Professor Cummins uses these words: "Special precautions were taken to avoid too deep a puncture. The escape of tuberculin into the subcutaneous areolar tissue vitiates the test and exposes the patient to the risk of a general reaction." Later, he says that in such attempts (the use of concentrations stronger than 1 in 500) "the possibility of dangerous constitutional reactions should not be lost sight of." In Professor Cummins's investigations the largest dose given intracutaneously is 0.0002 c.cm. After a long experience I am convinced that a single dose of 0.0002 c.cm. T.A. or T.A.F. given subcutaneously will never do harm. *A fortiori* it is

not possible to conceive that this dose, or even a much larger dose given intracutaneously, can do any harm.—I am, etc.,

W. CAMAC WILKINSON, M.D.Lond., F.R.C.P.

London, W.1, Feb. 27th.

COLLES'S FRACTURE.

SIR,—The two papers published in the *British Medical Journal* by Edwards and Clayton (January 12th, p. 61) and by Grasby and Trick (March 2nd, p. 391), are of great interest and importance. Neither, however, seems to me to explain the real cause of disablement in so many of these cases—namely, neglect to reduce the forward luxation of the lower end of the ulna so frequently present. When reduction of the fracture of the radius has been secured, the surgeon's thumb should be placed beneath the displaced lower end of the ulna and with a firm thrust it should be pushed dorsally. With this as a fixed point the hand and wrist are swung round into palmar flexion, pronation, and ulnar deviation. Dogma should be avoided in regard to the choice of splints and the position of fixation, but, in severe cases, the extreme Cotton-Loder position indicated above is the best, using moulded gutter splints of metal or plaster.—I am, etc.,

Edinburgh, March 2nd. W. A. COCHRANE.

IMMEDIATE ENUCLEATION FOR QUINSY.

SIR,—The kind remarks on the value of this method made by Mr. Whitelocke of Oxford (February 23rd, p. 374), following my memorandum of February 16th, will, I hope, be followed by others, both specialists and general practitioners, for the latter are the medical men who most often treat cases of quinsy from start to finish. Many specialists have told me that they enucleate an occasional case, and the journals of oto-rhino-laryngology often have abstracts of reports of foreign surgeons who praise the method. But English textbooks practically never even mention it as a possible course of action, whereas it should be regarded as the best course for over 95 per cent. of quinsies, just as immediate operation is regarded as the best treatment for the majority of cases of acute appendicitis.

Regarding Mr. Whitelocke's technique, it is what I learnt to do myself in 1914, but I could not get a decent snare until 1919; by that time I had found that the Collins pile forceps was superior to a snare, just as now most rhinologists use a Luc's forceps (not a snare) for ethmoid surgery, while a decent blunt-pointed, but sharp, straight (Mayo) scissors was superior to the knife. With the scissors the operation is so safe. Make a snip, wriggle the closed points into the extra-capsular space, then open the points widely, and the gloved finger does nearly all the rest. The lassitude and the pain make most quinsy patients prefer the ease of a "little whiff" over the side of their beds; the bother of "local" frightens them, and, personally, I have not wished to devitalize inflamed tissue with local anaesthesia, though, like Mr. Whitelocke, I always use it in debilitated patients—for example, during the course of phthisis or rheumatic fever. Since last August I have treated eight patients; six were between the ages of 18 and 25, and these needed the removal of *both* tonsils and the post-nasal adenoids, which the use of 10 or 15 c.cm. of ethyl chloride enabled me to do. Of the other two, one was too ill, and the other, a heavy, gouty publican, demanded to have as little done as possible, as he had to be at work next day, which he duly was!

I only removed the one tonsil, and nothing else, in these two cases, and hence novocain might have been useful.—I am, etc.,

Bishop's Stortford, Feb. 23rd. R. A. R. WALLACE, F.R.C.S.

SIR,—From time to time one reads in medical literature reports of cases the operative results of which are so excellent as to lead one to consider the necessity of altering one's technique. Such a case is that reported by Mr. Whitelocke in your issue of February 23rd (p. 374). His patient was suffering from "a large left quinsy" which must have been evolving for some time in view of its size and the attendant constitutional symptoms. Under the double influence of a sedative and local anaesthesia, the tonsil of the affected side was dissected out and the abscess evacuated. His patient made so rapid a recovery that on the following day he was correcting examination papers, and two days later he was conducting a viva voce examination.

My experience is so much at variance with that of Mr. Whitelocke, and his results are so incomparably better than my own, that I would ask him to be good enough to reply to the following questions.

1. What sedative (quality and quantity) does he give to overcome the trismus which has been such a distressing feature in so many of my cases? In many of them—even after local and general anaesthesia—the local inflammatory reaction has been so marked that I have had considerable difficulty in introducing a knife.
2. How does he, in such cases, differentiate—at operation—the capsule of the tonsil from the adjacent parts? In the few instances where I have tried to remove the tonsil in cases of peritonsillar abscess I have found it difficult to recognize the tonsil capsule and to deal with the haemorrhage which results.
3. What is his after-treatment of these cases? Although I try to be as gentle as possible, I cannot recall a case of even an uncomplicated tonsillar dissection where the patient would be capable of correcting an examination paper on the day following his operation.

—I am, etc.,

London, W.1, Feb. 24th. MICHAEL VLASTO.

THE DICK TEST IN SCARLET FEVER.

SIR,—With reference to the letter of Dr. William Brown on February 16th (p. 321), it would appear that he wishes us to believe that a positive Dick reaction in a patient who has had scarlet fever has a different significance from a positive Dick reaction in a person who has not had the disease. I cannot agree with this view.

The Dick reaction is a criterion of an individual's immunity to a specific toxaemia. The accepted conception of scarlet fever is that of a local infection with the *Streptococcus scarlatinae*, giving rise to a toxaemia which produces the typical rash (Kinloch, O'Brien, and others maintain that scarlet fever is only one phase of streptococcal infection). The Dick-positive reaction, whether in a healthy individual or a patient convalescent from the disease, always indicates susceptibility to scarlet fever.—I am, etc.,

Ilford, Feb. 25th. A. R. BALMAIN.

TREATMENT OF ACTINOMYCOSIS.

SIR,—In an interesting article on the treatment of actinomycosis with iodine (*Journal*, February 23rd, p. 347) Mr. Hubert Chitty quotes reports of two cases of mycetoma which had been cured by the same treatment. In Madras, where mycetoma (Madura foot) is a very common disease, we have for some years past persevered with the administration of iodine in many forms, including that recommended by Mr. Chitty, but without ever obtaining a cure of the disease. The main suffering in mycetoma is due to septic infection of the sinuses which are present, and which will improve with any sensible surgical treatment. The early effects of iodine and other drugs for this reason have sometimes been very promising, the late results always disappointing. At one time we hoped to cure the disease with deep *x*-ray therapy. The swelling was generally enormously reduced with this treatment, and the symptoms were alleviated, but after several months we were still able to cultivate the fungus from the tumour. A mycetoma, which does not become infected with other organisms, may, in my opinion, often remain small in size and cause very little suffering.—I am, etc.,

E. W. C. BRADFIELD.
Chesières, Switzerland, Feb. 25th. Lieutenant-Colonel I.M.S.

CEREBRAL ANGIOSPASM.

SIR,—With reference to the correspondence on this subject in your issues of February 9th and 16th, it would appear that the condition is less uncommon than has been supposed. The following three cases may be cited.

A medical practitioner, aged 45 at the time, was on holiday, convalescent after paratyphoid fever, leading an unusually sedentary life, and smoking considerably more heavy tobacco than his customary quota; he had been constipated for a few days. While

at breakfast one morning he suddenly lost the power of his right hand and dropped his knife; on rising from his seat his right leg gave way under him and he fell. He was unable to speak, but did not lose consciousness, and was able to write with his unaffected hand. The condition lasted a few hours, and two days later he was perfectly well. There have been no recurrences nor other symptoms of vascular disease during the fifteen years which have elapsed, and he has been conducting a busy practice.

A male, aged 62, consulted me four months ago complaining of attacks of loss of power and dizziness. The attacks had commenced seven years previously, occurred periodically for two years, and then remained absent for five years; they had returned a few weeks before I saw him, and became more frequent, until he was having them as often as twice weekly. The attack commences with dizziness and loss of power on the left side, and unless he can support himself with the right arm he falls; there is no loss of consciousness or of the power to speak. After a period of ten to forty-five minutes he vomits and breaks out in a cold sweat, and the paralysis disappears; he feels weak and upset for the next two days, but no paralysis or weakness of the affected side persists. He was formerly a heavy drinker, but has given it up; he smokes two ounces of thick black tobacco per week; his bowels are constipated. On examination, three days after his last attack, no abnormality of any of the reflexes was elicited. The pulse was full and bounding, and of high tension; the arteries were thickened, but not calcareous; the heart was normal and the urine free from albumin. He improved during the next fortnight on purgative and general treatment, but three weeks later the urine contained albumin and a trace of blood. For the past two months he has had no attacks and the urine has been clear.

A male, aged 49, was referred to me by Dr. Ivy McKenzie complaining of symptoms of angina pectoris. The anginal attacks date from April, 1928. There is a clear history of attacks of cerebral angiospasm fully a year prior to the first attack of angina. In March, 1927, he awoke one morning with paralysis of the right arm and leg; the paralysis persisted for half an hour and then disappeared completely. There were two subsequent attacks, each lasting half an hour, and in each instance the paralysis disappeared completely after the lapse of that time. There have been no recurrences of these attacks since. On examination the nervous system was normal. The blood pressure was not raised, nor were the radial arteries palpably abnormal. The heart was of normal size, the sounds being of poor intensity, but free from murmurs; electro-cardiograms were suggestive of myocardial degenerative changes (inverted T in leads II and III and left ventricular extrasystoles). The urine contained no abnormal constituents. The patient's bowels were constipated and the tongue was furred.

In all three cases constipation appears to have been a factor; in two there is a history of smoking heavy tobacco. The association of the arterial spasm with arterio-sclerosis and chronic renal disease in one case, and with angina pectoris and probably disease of the coronary arteries in another, is interesting.—I am, etc.,

Glasgow, Feb. 24th. A. A. FITZGERALD PEEL.

SIR,—Mr. Juler's comment on March 2nd (p. 421) on the cases described by Dr. Gubb and myself is apposite. The diagnosis of my case at the time was not "cerebral angiospasm"; but whatever may be the pathological explanation, it probably applied also to Dr. Gubb's case. In my case the tentative explanation was that the resistance of the arteries was increased by senile change, and that with the low blood pressure attending dyspepsia the blood supply to the left hemisphere was insufficient to maintain its functions. It is an interesting question whether angiospasm was present. I have no recollection of the state of the kidneys; but the patient's general health was so good, and the paralysis so transient, that we may have had no occasion to examine the urine.—I am, etc.,

Cambridge, March 2nd. F. J. ALLEN.

SIR,—Mr. F. Juler, on March 2nd, objects, on the basis of ophthalmological evidence, to the theory of angiospasm put forward by Drs. Gubb and Allen. May I be allowed to side with them as the result of my own investigations, and bring some ophthalmological reasons for supporting this theory, which is usually termed "vascular crisis," a name given years ago by Pal in his monograph on this subject?

In advanced cases of hyperpiesis where the kidney efficiency is still good one can see a focus of exudation in the retina differing from retinitis albuminurica by its sharply outlined edges, its colour, and absence of ophthalmoscopically detected retinal oedema. It strikes the investigator by the fact that adjoining vessels are not covered by this exudation, and are seen sharply outlined, in contrast with retinitis albuminurica, where they are covered by the exudation, and their outline is diffuse. Such a focus may sometimes be accompanied by minute retinal haemorrhages—flat or striate—in its immediate neighbourhood. In one case I saw newly formed tiny vessels passing from the intact retina into the exudation, and abruptly ending near the periphery of the latter. This kind of exudation may lead to a permanent scar of the affected part of the retina, but it may also disappear after a few days, or even a few weeks, without leaving any trace; the retina completely recovers, as judged by the ophthalmoscope. The picture is especially beautiful in the red-free light.

In my opinion the most probable explanation of this phenomenon lies in the disturbance of local metabolism by diminished oxygen supply, caused by angiospasm of minutest arterioles or capillaries. That the larger vessels are not guilty is evidenced by the fact that only a very small part of the retina is affected, and that they do not show any change before, during, or after the appearance of such an exudation. If the angiospasm is extensive or has existed too long, or the lumen of the vessels is completely obstructed by atheroma or by a thrombus, a scar of the retina will result; but if the angiospasm is not so extreme, the retina may fully recover. Most probably a complete analogy exists between those retinal complications of hyperpiesis and vascular spasmodic attacks of cerebral origin.

The subject is too large to be covered in a letter, but I may add that additional evidence of vasomotor influence is afforded daily by using the oscillometer. An extreme case was published by Oertel, who saw actual gangrene of the intestine follow a prolonged spasm of the mesenteric artery. See also the theory of Volhardt on nephritis.

I cannot agree with the expression "arterio-sclerosis with hyperpiesia" in Mr. Juler's letter. The name is very misleading, and these diseases, in my opinion, have very little in common, if anything at all. I discussed this important matter more fully in my papers in the *British Journal of Ophthalmology* in 1927 and 1929.—I am, etc.,

London, E., March 3rd. N. PINES.

CARDIAC DISEASE IN SOUTH AFRICAN NON-EUROPEANS.

SIR,—It was with much interest that I read Dr. Heimann's paper on heart disease in South Africa (February 23rd, p. 344). Whilst in Kenya Colony I carried out a similar series of investigations amongst the natives there, and the statement of Dr. Carey Coombs (quoted by Dr. Heimann) prompted me to publish some of my observations.[1] It may be of interest briefly to contrast these with those of Dr. Heimann.

My observations were not confined to inmates of a hospital in a town, but were conducted partly at a hospital in a large native reserve and partly while on tour in the native reserves. In this way not only were large numbers of sick natives seen near their own homes, but systematic examination of healthy natives was also carried out. During my tour of over two years, approximately 1,800 in-patients were admitted to the hospital under my care, 12,000 labour recruits were examined (in the paper quoted above there was a printer's error in these figures), several hundred natives of all ages were examined in connexion with a census of the population and a systematic examination of normal blood pressures, and thousands of sick natives were seen on tour in the reserves. From all these I was only able to collect records of ten cases of valvular heart disease. It would seem, therefore, that this condition must be much rarer in East Africa than it is in South Africa. All these cases were aortic regurgitation, and I never encountered a case of mitral stenosis. The etiology is discussed in my paper, but my conclusions were that certain cases seemed most probably rheumatic in origin.

Syphilis is common amongst some tribes in East Africa, but in my experience syphilitic heart disease is rare. I was interested to note that Dr. Heimann had seen cases of syphilitic pericarditis, as I reported a case that appeared to be a gummatous pericarditis and myocarditis.[2] High

[1] *Kenya and East African Medical Journal*, September, 1928, p. 210
[2] Ibid., May, 1928, p. 48.

blood pressure I never encountered, and arterial degenerations appeared to be of lesser degree than in Europeans. I also found that the normal blood pressure in the African native differed in certain respects from that in the European.[1]

In his conclusion Dr. Heimann remarks that there does not appear to be a wide divergence between the etiology, pathology, and clinical signs of heart disease in Europeans and African non-Europeans. With this I cannot altogether agree. As far as rheumatic, syphilitic, and other infective lesions are concerned, that remark appears to be true. But the type of disease that manifests itself as hyperpiesia, angina pectoris, and coronary thrombosis, and which presents such a serious menace to a healthy old age in the European, appears but rarely to affect the African.

I encountered a type of case in Kenya that I have not been able to correlate with any condition that I have seen described. The essential feature of these cases is a displacement of the apex beat to the left. On casual examination it appears that the heart is enlarged. The absence of any obvious reason for such enlargement led me to investigate a number of these cases.[2] I came to the conclusion, after such investigations as circumstances permitted, that the heart was displaced to the left, and not appreciably enlarged. There appeared to be no impairment of the function of the heart. There was no chest condition detectable that could account for this condition, but all the cases I encountered were associated with an enlarged spleen, and had come from malarious districts. I have been unable to decide whether the splenic enlargement could be responsible for cardiac displacement.—I am, etc.,

C. P. DONNISON, M.B., B.S.Lond.,
Late Medical Officer, East African Medical Service.

South Benfleet, Essex, Feb. 27th.

AMAUROTIC FAMILY IDIOCY.

SIR,—Dr. Robert Platt's further remarks on this subject on February 23rd (p. 373) are very acceptable. In regard to the R—— family tree, I have had news this week of a branch of it which has made South Africa its country of adoption.

Shalom R——, a son of the related ancestors, migrated there and married, his wife not being the remotest relation. They had two male children, of whom the younger, at the age of about 25, was confined in a mental institution. Full particulars of his case are not yet to hand. The elder had three children, by a wife who again was not in any way related to him, of whom the first was stillborn, the third is alive and well, and the intermediate one died. From the description of its symptoms it is reasonably certain that it was an amaurotic family idiot, though the condition was diagnosed at the time as "cerebral abscess."

A sister of Shalom R—— also lost a number of grandchildren in infancy from causes at present not ascertained.

This must only be regarded as an advance notice of these cases, since there has not yet been time to get into communication with the South African medical men concerned, as I hope to do. Further, the sensitive and apprehensive temperament of the adult members of the family may, they suggest, have some relationship with this disease. I offer it for what it is worth.

In this family, at least, I hold that heredity has a marked bearing, and I shall be much interested to know if Dr. Mandel, on deeper investigation, can establish collaterals to his cases.

Assuming that all these cases are the outcome of DR—DR marriages, it would appear that DR types are not rare throughout the scattered Jewish race, in which event this disease should be more common, or that the DR members of this family tree have been highly unfortunate in selecting their mates, even from widely separated parts of the world. Alternatively, I suggest that in the R—— family there is a tendency to this disease more strong than a simple Mendelian recessive characteristic.

While Mendel propounded a working hypothesis of the first order, he left confessedly unexplained the origin of the transmissible character of a "sport," to which category this disadvantageous condition may belong. In sporadic cases we may imagine that transmissible virulence has not been attained, especially as the subject has no chance of breeding. Mendelism, satisfactory up to a point, awaits its Einstein.—I am, etc.,

D. STENHOUSE STEWART.

Hull, Feb. 23rd.

[1] *Lancet*, 1923, vol. i, p. 6.
[2] *Kenya and East African Medical Journal*, November, 1927, p. 241.

INTRACRANIAL SURGERY.

SIR,—In the review of my report to the Medical Research Council on intracranial surgery, published in your issue of March 2nd (p. 406), you "express regret at the almost complete omission of the names of English neurological surgeons" from the bibliography. May I point out that the report was not concerned with the work of English neurological surgeons, but was, to quote from its opening paragraph, "an attempt to describe the methods of diagnosis and treatment employed in Dr. Harvey Cushing's clinic at the Peter Bent Brigham Hospital, Boston"?

It should also be explained, as was done in the report, that the neuro-surgical clinic is merely one part of the general surgical clinic, directed by Dr. Cushing. The neuro-surgical cases are not segregated, but are scattered through the general surgical wards so that all house officers and surgical dressers may come into contact with them.—I am, etc.,

HUGH CAIRNS.

London, E.1, March 5th.

*** We are very glad to publish Mr. Cairns's letter, which corrects a misapprehension. His list of references applies directly to the text of the report, and is not a general bibliography.

THE CAUSE AND CURE OF MORNING SICKNESS.

SIR,—Dr. Richmond, in his instructive memorandum in the *Journal* of February 23rd (p. 349), suggests that the cures he has wrought in the condition of the morning sickness of pregnancy have been due to opening the cervical canal by means of tampons of glycerin.

In view of the recognized propensities of glycerin, when locally applied, of acting as a stimulant to uterine activity resulting in the evacuation of the viscus, it would be interesting to know whether in any of the cases so treated the cure of the pathological condition coincided with a premature termination of the physiological one.—I am, etc.,

JAMES KILPATRICK REID, M.B., Ch.B.

Birkenhead, Feb. 25th.

ACTINOTHERAPY AND DEAFNESS.

SIR,—I wish to thank Mr. Norman Barnett for his suggestion (February 16th, p. 323) of a functional cause of the case of chronic deafness which I reported in your columns on January 19th (p. 133). When I recorded the case I gave all the information I could vouch for. Since writing, a specialist's report has been placed in my hands, dated December 10th, 1926, from which I quote, "Her deafness is apparently of some considerable standing, as the middle ear contents, ossicles, foot piece of stapes, show marked adhesions—fixation."—I am, etc.,

T. C. HUNTER.

Morpeth, Feb. 25th.

Universities and Colleges.

UNIVERSITY OF OXFORD.

IN Convocation on February 26th a decree was passed to discontinue the examinations for the Diploma in Public Health until further notice.

On the motion of Dr. E. W. Ainley-Walker, a decree was passed unanimously accepting with gratitude the gift of £1,000 from the fund placed at the disposal of the Prime Minister by Lord Beaverbrook for the promotion of medical knowledge. This sum, it was announced, will be used for the establishment of studentships for medical research.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on March 1st the following medical degrees were conferred:

M.B., B.CHIR.—J. A. Hartley, J. D. Proctor.
M.B.—A. J. Dix-Perkin.

UNIVERSITY OF ABERDEEN.

THE Senatus of the University of Aberdeen has resolved to confer the honorary degree of LL.D. upon Dr. Walter Elliot, M.P., Parliamentary Under-Secretary of State for Scotland. The graduation ceremony will be held on March 27th.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

The Local Government Bill in the House of Lords.

Discussion in Committee.

IN the House of Lords on Tuesday, March 5th, the Local Government Bill was considered in committee, the EARL OF DONOUGHMORE in the chair.

The MARQUESS OF READING moved an amendment to Clause 4 (provisions as to the alternative powers of giving assistance), providing that in so far as administrative schemes prepared by local authorities under the clause related to hospitals they should take reasonable steps to seek full co-operation with every voluntary hospital in the area of the authority.

Lord DAWSON OF PENN also had an amendment on the order paper, to the effect that a council in preparing a scheme under this section shall have regard to the desirability of consulting (*a*) any body existing in the area which is so constituted as to be representative of the voluntary hospitals in the area, and (*b*) any body existing in the area which is so constituted as to be representative of the duly qualified medical practitioners in the area, including those on the medical and surgical staffs of any voluntary hospitals in the area.

The EARL OF ONSLOW, speaking on behalf of the Ministry of Health, intimated that he would be prepared to move a new clause to the following effect: "The council of every county and county borough shall make such arrangements as they think desirable for securing that the functions transferred to them under this part of the Act with respect to the provision of hospital accommodation will be discharged after consultation with such body, if any, within the county or county borough as they consider to represent the voluntary hospitals in the area."

This new clause was criticized in the subsequent debate by several lords as too loosely drafted and vague in its terms, and complaint was made that it did not meet the desire expressed by Lord Dawson to ensure consultation with the medical profession in each area.

Lord ONSLOW said that the Government desired to meet the wishes of the House. He undertook to have the clause redrafted before the report stage. He hoped that in its new form it would be acceptable to the House, including Lord Dawson.

The MARQUESS OF READING withdrew his amendment.

Lord DAWSON said he would not move his amendment, but he hoped that they would get something more out of the Government.

Debate on Second Reading.

In the House of Lords, on February 26th, the second reading of the Local Government Bill was moved by the LORD CHANCELLOR (Lord Hailsham), who, in his exposition of it, said that under the bill, by centralization and specialization in selected institutions under the Poor Law, a far more skilled service could be provided than was possible to-day. The bill gave power to the county councils for provision of hospitals or maternity homes or for the making of subscriptions and donations to existing hospitals and institutions. Provision was made for the recovery from those who accepted assistance in these public institutions of a contribution towards the expense, but that did not apply to treatment in infectious hospitals, including hospitals for the treatment of tuberculosis and venereal disease, since it was in the interests of the public that persons should be isolated in those institutions as soon as possible. Provision was also made for acceleration of the process under which medical officers of health became full-time servants of the State, and for the making of regulations prescribing the qualifications of such officers and of health visitors. The bill further enjoined a survey by county councils of the existing accommodation in hospitals for infectious diseases.

Lord PARMOOR moved the rejection of the bill.

The debate was resumed on February 27th. Lord BEAUCHAMP contended that the bill should have split Poor Law functions into three, all the health, mental deficiency, and children's services being given to the county councils.

Lord DAWSON OF PENN said he proposed to limit his remarks to the parts of the bill of which he had some knowledge, and particularly that which concerned the foundation of hospitals, a subject concerning which discussion in the House of Commons had been strictly limited. In Part I of the bill were clauses which enabled and might encourage councils to found general hospitals for treatment of general medical and surgical disease. This new departure probably ushered in a new era for medicine in this country. He thought the proposals right if suitably safeguarded, but neither county councils, county borough councils, nor their medical advisers had previous experience of the whole field of curative medicine. They had a limited knowledge in the application of curative medicine at tuberculosis clinics and in maternity; the fact that the councils had run Poor Law hospitals was but little training for the running of big general hospitals. The powers in the bill enabled the councils to convert Poor Law hospitals into general hospitals and to found general hospitals at a time when the demand for hospital accommodation was increasing throughout the country. Hospitals were now needed for the whole nation. They used to be for the sick poor; now everyone was poor, and sometimes sick. Social and economic conditions and the progress of knowledge demanded hospitals. The art of medicine now called to its aid a number of sciences, and these new sciences required team work. Years ago a disease of the chest required a stethoscope and a bottle of medicine. To-day it also required, besides the clinical skill of the physician, the radiologist and the bacteriologist. A surgeon who wished to operate on the stomach now perhaps required the skill of the chemist or of the radiologist. Many branches of knowledge had to act in co-ordination. Each of these specialties required its equipment, and the equipments had to be brought together for efficiency and for cost, because the more science progressed the greater the cost of treatment. But for what he might call mass production a large proportion of the population would be without these benefits—another reason why people in increasing numbers needed hospital treatment. He admitted that the voluntary hospitals of the country could not entirely fulfil these needs, and believed that one of the questions before the Government when preparing the bill was how this hiatus could be filled up. There could be a considerable extension of a form of co-operative hospital in garden suburbs and garden cities, where there was great scope for a system of co-operative treatment. Co-operative health societies could be linked with insurance societies to solve some of the difficulties of hospital provision, but even when that had been done a large gap would remain to be filled. All the conditions of to-day tended to move the location of illness from the home to the institution, and so the need for hospital accommodation was great. Yet, as he had said, neither the councils nor the medical staffs had experience in the curative treatment of disease. The councils were advised by medical officers of health and by people who looked after clinics. In their own domain these did excellent work, but their experience of curative medicine was little or none, although four-fifths of the medical men in this country were engaged in it. Part I of the bill lacked appreciation of the essential conditions of success. In effect, it said to the Public Assistance Committees, "You can convert your Poor Law hospitals if you wish. You can build large hospitals. We would like you to co-opt a few people who know something about the running of a general hospital, but we will not force you to do so." A hospital was not a building made with hands. It was an organization, an assemblage of great traditions. The efficiency, the flexibility of administration, the public spirit, and the warmth of heart of the hospital service of this country had all grown up round the voluntary system, which had made the hospitals of England famous throughout the world. The ambition of the young man of talent was to get to these hospitals. There he worked for years at a pittance to gain experience, reputation, and discipline. That was the recognized road within the profession, and from these hospitals also the nurses came. Obviously the voluntary hospitals should be the kernel round which any new hospital system should be built, and legislation should provide that this mode of progress was not only permitted but secured. The voluntary hospital was a tender plant, and could be easily killed. Let it direct in building up the new hospital policy which was needed for the country. Supposing there were no co-opted minority on the Public Assistance Committees, and that they had a free hand. Supposing—and this was not imagination—that a council were returned committed to the policy of a whole-time municipal medical service. That council would build up a service independent of the voluntary hospitals, competing with them, and overlapping them. At this moment some boroughs were trying to run a medical service. The avowed object of certain people was to set up municipal hospitals, staff them with a full-time staff, and run them as a municipalized service. That would be a disaster. How would they get their staff? Presumably they would advertise for it, as if physicians and surgeons grew like gooseberries on a bush. Advertisement did not bring in the right people, and already there had been lamentable consequences of the wrong people staffing hospitals. The Government should make compulsory the co-option of a minority skilled in hospital work on the Public Assistance Committees. On Education Committees it was compulsory to have a co-opted minority of people skilled in education. If that was sound for education, why not do it for health? The medical profession had practically unanimously asked that co-option of a minority skilled in hospital work should be compulsory, and King Edward's Hospital Fund had taken the same line. Could the House of Lords desire to start a new venture which might lead to a wide establishment of municipal hospitals, and yet neglect all the traditions and knowledge that had gathered during the years? He wished to urge one other amendment on the

Government. Hitherto the health services of the country had been run by men who had specialized in preventive medicine—medical officers of health, tuberculosis officers, school medical officers. He admired their work, but they had never had anything to do with disease, and many of them had not been in contact with hospitals since their student days. How could they be expected to advise their councils wisely on curative hospitals? Ever since the Ministry of Health Bill passed the policy of the official doctor had proceeded on lines divergent from those doctors, constituting four-fifths of the profession, who belonged to the curative branch. That divergence was lamentable, and would be still more serious if it continued. To meet it he suggested that there should be set up, under the chairmanship of the medical officer of health, in each district which the council administered, an advisory council of doctors. This proposal had been before the Ministry of Health for some time, and would bring to the aid of the men who had to administer the experience of the men who knew. He believed the hospital policy of the bill could confer great and continued benefit on the community if the Government would accept the safeguards he had suggested in the form of amendments at a later stage.

Lord ONSLOW, replying for the Government, said Lord Dawson of Penn had ably dealt with the question of hospitals. On this matter there was some misapprehension about the effect the bill would have. The bill only made one change in the law—by giving county councils the powers now possessed by county boroughs and county districts to establish hospitals or to subscribe to existing voluntary hospitals. Those powers were given under Section 131 of the Act of 1875 to local authorities; but in those days local authorities did not include county councils, because these did not exist. The bill, therefore, merely put county councils in the same position as county boroughs. It gave county councils the right and duty to take over existing Poor Law institutions. They would allocate these to the best advantage, using one for tuberculosis, another for chronic cases, and so forth. As to voluntary hospitals existing, or to be established in the future, the Government looked for the closest co-operation between them and local authorities. The county councils, with their new hospital activities and powers, should work in close co-operation with voluntary hospitals in London and everywhere else. Such co-operation had been growing fast lately, and they hoped the bill would increase it. It would be difficult to amend the bill in order to make a statutory provision on this question. Possibly the machinery of the Voluntary Hospitals Committee, which included representatives of the hospitals, the medical men in the district, and the local authorities, might be utilized. Lord Dawson's proposal for compulsory co-option could be more easily discussed if he later moved an amendment. Turning to the question of block grants, Lord Onslow said it had been contended that this system, especially in the case of maternity and child welfare, would militate against the efficiency of the services. Maternity and child welfare services were most essential in the poorer districts, which, under the percentage grant, could not spend a considerable amount upon them. Under the bill necessitous areas would receive a large proportion of the Exchequer contribution, and so would be able to devote more money than in the past to maternity, child welfare, and other health services. Against local authorities which did not spend sufficient money on maternity and child welfare, the Minister would have under the bill a weapon which had never existed before.

The House divided and read the bill a second time, by 102 to 20.

The House of Commons was again in committee on the Local Government (Scotland) Bill on March 5th.

Army Estimates.

Presenting the Army Estimates to the House of Commons on February 28th, on the motion that the Speaker leave the chair, Sir LAMING WORTHINGTON-EVANS drew special attention to the assistance given to the army by members of the medical profession. He said the army could derive nothing but benefit from a good understanding between the civil and military branches of the medical profession, which displayed itself in fruitful co-operation on many committees. He hoped that as the scope and attractiveness of the Army Medical Service became better known through their advocacy the present welcome increase in the number of candidates would continue.

Mr. J. W. LAWSON commented on the recruiting statistics in the Army Report. Dental standards had been lowered, the height standard had been lowered from 5 ft. 3 in. to 5 ft. 2 in., yet only 36 per cent. of recruits were accepted.

Lady IVEAGH protested against the test-firing of 16 in. shells from Kent to a target in Essex, passing over the town of Southend. This affected the value of that town as a resort for convalescents. She had a protest against the firing, which had been signed by thirty-four medical men practising in Southend. This letter declared that "instances in which definite injury has resulted to our patients are within our experience, while ill effects on children have been frequently brought to our notice." Mr. DUFF COOPER said the War Office were alive to the hardships of her constituents in Southend, but had not been able to discover a more suitable place for this firing.

Mr. BECKETT spoke of the small proportion of cases of tuberculosis in the army which were admitted to be attributable to service. The Admiralty had agreed that such men should have the right of independent appeal and adjudication. The Secretary for War should also do justice to these cases.

A vote for War Office pensions and other non-effective charges was taken later the same night. Dr. VERNON DAVIES asked whether there was any chance for a service man to appeal against the decision of the medical chiefs of the War Office or of the authorities at Chelsea. Were there any methods by which a man could obtain, either himself or through his agents, any record of his medical history or of the reason which determined whether he was entitled to a pension or not? Medical men were being constantly worried about such cases, and, as far as Dr. Davies could find out, the opinion of a civilian medical man in a case of that kind was of no account. He did not criticize the authority or the skill of the medical officers of the War Office or at Chelsea, but it would give satisfaction to the civilian medical profession to have information of the procedure in this class of case.

Sir LAMING WORTHINGTON-EVANS said that when a man claimed a pension on account of disability his papers went to the board at Chelsea, and were examined with the greatest care. The medical evidence was sifted, and the man was examined. The man had an appeal to the medical authorities at the War Office, and the board there really did give justice in these cases.

Dr. DAVIES thanked Sir Laming for his explanation, but asked him to consider the possibility of co-opting civilian members to the appeal board at the War Office.

The House agreed with the vote. Closing the debate, Mr. DUFF COOPER said the health of the troops at Shanghai had considerably improved, but was not satisfactory.

Bills.

On February 28th the House of Lords passed the Factory and Workshop (Cotton Cloth Factories) Bill through committee. This bill authorizes the issue of regulations regarding humidity in cotton-weaving sheds. On the same day the House of Lords further debated legal points in the Age of Marriage Bill.

Illicit Drug Trade in China.

On February 27th, in a reply to Sir Robert Thomas, Mr. G. LOCKER-LAMPSON said that, with a view to preventing participation by British subjects in the illicit drug trade in China, the British Government had enacted regulations under which subjects so offending would be liable to heavy penalties, and in the last resort to deportation.

On February 28th Mr. CECIL WILSON asked the Home Secretary to explain what had become of a balance of 1,017 kilograms of heroin unaccounted for in the totals of that drug exported from, or available for, internal consumption in the United Kingdom in 1924 and 1925. Sir W. JOYNSON-HICKS replied that the figures included 745 kilograms of heroin in 1924 and 15 kilograms in 1925 which were not necessary as such, but were reconverted into morphine. The bulk so reconverted consisted of illicit consignments to the Far East, which were seized at Hong-Kong and sent home to this country for disposal. The balance in each year approximated to the general average of the surplus of heroin imported and manufactured over that exported or re-exported. The substance was useful for medicinal purposes, and the object of the Home Office was to prohibit its use except properly in medicine. Heroin seized at Hong-Kong was not destroyed, but sent here to be utilized for medicinal purposes.

Sterilization of Mental Defectives.—Colonel WEDGEWOOD asked, on February 27th, whether the Minister of Health had received a petition, signed by many doctors, asking for the sterilization of criminals and mental defectives, and whether the Government intended to take any action in the matter. Mr. CHAMBERLAIN replied that he had received a resolution urging that an inquiry should be held into the best methods for dealing with mental deficiency, including a special inquiry into the possibility and advisability of legalizing sterilization under proper safeguards and in certain cases. He could not yet indicate the intentions of the Government in the matter.

Inmates of Mental Institutions in Scotland.—Sir JOHN GILMOUR stated, on March 5th, that in Scotland, at January 1st, 1929, there were in royal asylums 3,616 lunatics; in district asylums 12,515; in parochial asylums 241; in private asylums 42; in the lunatic wards of poor-houses 880; and under care in private dwellings, including specially licensed houses, 1,623; making in all a total of 18,917. There were, in addition, 909 patients voluntarily in residence in the respective institutions at that date, and 73 inmates of the criminal lunatic department of the prison at Perth.

Hookworm Disease.—Mr. Amery told Sir Robert Thomas, on February 25th, that the medical departments of the East African dependencies were alive to the importance of combating hookworm disease. Special intensive campaigns against it have been undertaken in the past two years by the medical departments of

Kenya and the Tanganyika Territory with encouraging results, and were still in progress. No returns of the number of cases successfully treated in 1928 were available. While officers are from time to time deputed to undertake special work against the disease, its treatment was part of the ordinary duties of all Government medical officers in the East African dependencies.

Fibrosis of the Lungs.—Sir W. JOYNSON-HICKS stated, on February 28th, that he had seen the report by a medical inspector who attended an inquest at Leeds on a woman who, up to four years ago, was employed at an asbestos factory in Armley, and who died of fibrosis of the lungs. Sir William said it appeared from medical evidence that death was due to the effects of dust. The effects of this dust were already the subject of a comprehensive inquiry by the medical inspectors, one of the main objects of which inquiry was to determine the precautions needed for the prevention of this disease.

Early Rickets in Distressed Areas.—In answer to a question by Dr. Vernon Davies, on February 25th, Sir KINGSLEY WOOD stated that the measures taken to prevent the onset of rickets, and to deal with such cases as arose, were a matter in the first instance for the maternity and child welfare authorities of these areas. Mr. Chamberlain was advised that the authorities were alive to this matter. He had recently sanctioned increased expenditure on the supply of milk to expectant and nursing mothers and to young children in these areas. Dr. DAVIES asked whether Sir Kingsley would communicate with the South Wales health authorities to see that cases of rickets were followed up after treatment. Sir KINGSLEY WOOD said that he would look into that. Dr. DAVIES asked Sir Kingsley if he knew this was not a question of shortage of food, but of improper food which the children were receiving. Sir KINGSLEY WOOD said that was so. He reminded the House that the report just issued by officers of the Ministry of Health stated that to a great extent disease has been controlled by means of maternity and child welfare services.

Maternity and Child Welfare Centres in Scotland.—The LORD ADVOCATE (Mr. W. Watson) told Mr. Campbell Stephen, on February 26th, that at the end of 1928 there were 193 maternity and child welfare centres in operation in Scotland. During the year ended December 31st, 1927, the number of mothers who attended the centres for advice or treatment or for food and milk was approximately 55,000. The applications for food and milk were 17,208 in respect of mothers, and 44,598 in respect of children. The total expenditure on food and milk for the year ended May 15th, 1928, was £52,864, and the total expenditure under schemes of maternity service and child welfare, excluding food and milk and administrative expenses, was £205,931.

Consumption of Opium in Hong-Kong.—Asked by Mr. Ponsonby to give the reasons for the failure to restrict the consumption of opium at Hong-Kong, Mr. AMERY said the Hong-Kong Government had established a monopoly of the sale of opium with the intention of restricting consumption by charging high prices. That monopoly was not effective because of the abundance of cheap opium in China and the proximity of Chinese territory. In the hope of solving the difficult problem in Hong-Kong the British Government suggested in 1928 that the League of Nations should send a commission of inquiry to investigate the opium problem in the Far East. The League had agreed to do so.

Radium.—Mr. LOCKER-LAMPSON stated, on February 27th, that in a few weeks' time the Government would receive a report from a subcommittee of the Committee of Civil Research on the radium requirements of this country and the possible sources of supply. Until this report had been considered the Government could not judge whether to ask the League of Nations to institute an inquiry into the conditions of production and sale of this substance. On the same day Mr. CHAMBERLAIN, in reply to Dr. Little, said that the Medical Research Council, in apportioning the stock of radium salt which had been bought at the public expense, paid consideration to the technical experience in its use of those to whom it was supplied.

Registration of Doctors for Military Purposes.—Mr. MALONE asked the Secretary for War, on February 26th, whether circular letters were being addressed by district military headquarters to medical practitioners in the district requesting the practitioners to fill in a form stating whether, in the event of mobilization, they would be willing to devote a portion of their time to work in the local military hospitals in order to fill the vacancies created by the withdrawal of regular Royal Army Medical Corps officers for the expeditionary force; whether this registration of doctors for military purposes was being carried out all over the country on his instructions; and, if so, with what object. Sir LAMING WORTHINGTON-EVANS answered that inquiries were being made by the military authorities in various parts of the country to see how far the local civil medical practitioners could be counted on in the event of mobilization to act in a civil capacity in hospitals in the United Kingdom in place of Royal Army Medical Corps officers until relieved by other Royal Army Medical Corps officers.

Medical History of Discharged Soldiers.—On February 28th Mr. SHEPHERD asked a question about the medical history of a man discharged from the army. Mr. DUFF COOPER, Financial Secretary to the War Office, said the medical records of soldiers were confidential. To disclose details from them would be contrary to established practice. Dr. VERNON DAVIES asked whether an appeal was not handicapped if the appellant could not get particulars of the medical history of the case. Mr. DUFF COOPER said the previous history was open to the people advising the appellant.

Health of the Mercantile Marine.—Sir RICHARD LUCE asked, on February 28th, whether the necessary sickness and mortality statistics were available or in preparation for the joint committee appointed by the Board of Trade and the Ministry of Health to consider matters affecting the health of the mercantile marine. Commodore KING replied that in addition to statistics published by the Registrar-General an annual return was published by the Board of Trade of all deaths on ships registered in the United Kingdom. Whether these statistics could be improved or supplemented was being considered by the joint advisory committee.

Colonial Surgical Appointments.—Dr. DRUMMOND SHIELS asked Mr. Amery, on February 25th, whether in one colony certain surgical appointments were reserved for holders of the Fellowship of a particular Royal College of Surgeons; whether this practice had the approval of the Colonial Office; and, if not, whether he would call the attention of the Colonial Government to the matter. Mr. AMERY said he was informed that in one of the colonies there was a departmental regulation that had the effect of excluding from consideration for certain surgical appointments candidates other than holders of a particular surgical diploma. He did not think that assignment to particular technical posts could fairly be based on academic qualifications alone to the exclusion of other qualifications, such as experience, skill, and personal suitability. He was inviting the Colonial Government concerned to attend to the matter.

Factory Inspectorate.—Answering Mr. Kelly, on February 28th, Sir W. JOYNSON-HICKS said the number of factory inspectors actually employed was now slightly larger than six months ago, vacancies having been filled. The question of increasing the factory inspectorate was being considered by a departmental committee under the chairmanship of Sir Vivian Henderson. The House would be informed of the recommendations of this committee.

Notes in Brief.

There are in England ninety-eight day nurseries recognized by the Ministry of Health. The policy of the department is to encourage these nurseries.

On the allegation that bombs or shells carrying disease or plague germs were used by the German forces on the Western Front during the war the British War Office has no information beyond that contained in the official history of the war.

Obituary.

SIR HECTOR MACKENZIE, M.D., F.R.C.P.,

Consulting Physician to St. Thomas's Hospital, the Brompton Hospital for Consumption, and King Edward VII Sanatorium.

WE deeply regret to announce the death on Saturday, March 2nd, at his residence in Upper Brook Street, of Sir Hector William Gavin Mackenzie, at the age of 72. He was ill for a few days only with symptoms of bronchopneumonia of the type which is now so prevalent.

Hector Mackenzie gave evidence of his outstanding ability at an early stage of his career, and such were the opinions formed of his prospects at Cambridge that it was regarded almost as a ground for condolence when he graduated in 1880 as fifth Wrangler. Immediately after this he was elected a Fellow of his own college, Emmanuel. In 1882 he entered the medical school at St. Thomas's Hospital and carried off various prizes, the culminating one being the Mead Medal for Clinical Medicine. He qualified in 1884 as M.R.C.S.Eng., and graduated M.D. Camb. in 1888. After holding the junior medical appointments at St. Thomas's, he was elected assistant physician, then physician, and ultimately, on his retirement in 1919, consulting physician. Concurrently with these appointments at St. Thomas's he was the holder of similar posts at the Brompton Consumption Hospital, and for a shorter time at the Royal Free Hospital. He became Fellow of the Royal College of Physicians in 1892, examined in medicine for the Conjoint Board for four years, served as censor for three years from 1916, and delivered both the Bradshaw and Lumleian Lectures. During the war he served as captain in the R.A.M.C.(T.) attached to the 2nd London General Hospital at Chelsea. He was knighted in 1923.

Without any doubt Mackenzie was a most able general physician, and extended his purview over the whole range of medicine. But in two directions he could claim to be a specialist of the best type. He spoke with authority on diseases of the thyroid, for in 1892, simultaneously with, but independently of, Dr. Fox of Plymouth, he discovered the epoch-making fact that thyroid extract was as effective when given by the mouth as under the skin. The authority with which he could claim to speak on the subject of diseases of the chest was perhaps based rather on his long association with Brompton Hospital and the King's Sanatorium than upon any achievement parallel to that in the territory of the ductless glands, but it was fully

justified by virtue of his highly developed skill and ripe experience. Mackenzie's writings were mainly devoted to the two lines of thought to which reference has just been made. He was not the author of any independent treatise, and his literary work has to be sought either in the reprints of lectures or in articles in various systems of medicine. He wrote well and with restraint; it might perhaps have been lighter reading if there had been less of the latter quality. His characteristics as a physician and teacher may be deduced from the sketch of his personality which it is the aim of the following lines to give. They are written, as might be supposed, by a colleague and close friend of many years' standing.

"There was a curious dichotomy between Mackenzie the hospital physician and Mackenzie the social individual; this was definite enough to justify their being tabulated under (*a*) and (*b*). It was not, of course, a case of Jekyll and Hyde, for they were both Jekylls, but of a different type. Jekyll (*a*) was an extremely taciturn individual. There was no dourness about the taciturnity, which seemed to depend upon an abnormally high threshold for speech. He never went to meetings of his colleagues, and on his clinical ward rounds it was not altogether easy for the students to extract the spoken word. This was always good when it came, but the difficulty was to get it. In spite of this difficulty of communication Mackenzie's students got to love him, and the friendships thus formed proved in some cases to be lifelong. In his relations to hospital patients Mackenzie suffered to some extent from his difficulty in establishing a personal tie, but at all events they had from him the best that modern medicine could give. Mackenzie as a social entity—whom we may call Jekyll (*b*)—was a different being. He was quiet still, but full of humour, and possessed of a characteristic laugh which was rather a chuckle than a laugh. He was a cultivated musician, was a good linguist, and a reader of wide scope. In congenial society, preferably one of both sexes, he could let himself go, and was worthily described as 'the life and soul of the party.' His great hobby was skating, and he was enjoying this within a fortnight of his fatal illness. This is a very faulty sketch of what was a most complex character. No attempt has been made to conceal the existence of a negative phase beyond which many colleagues and potential friends found it difficult to penetrate. If they had succeeded they would have found a being of remarkable charm and of singularly rich equipment."

Sir Hector Mackenzie, when Bradshaw Lecturer before the Royal College of Physicians of London in 1916, chose as his subject exophthalmic goitre; and in 1922 his Lumleian Lectures were devoted to diseases of the thyroid gland. He also contributed articles on the thyroid to Allbutt's *System of Medicine*. In 1902, when the British Medical Association last met at Manchester, he was president of the Section of Pharmacology. He married in 1890, but leaves no children.

Mr. W. H. BATTLE, consulting surgeon to St. Thomas's Hospital, writes:

As one who was closely associated with Hector Mackenzie during the greater part of forty years, I should like to add a few lines to those which have been contributed by others of his colleagues and friends. He was a difficult man to know, and did not encourage attempts to become intimate; but when one did have the privilege of intimacy he was responsive and revealed a very fine character. He was never too busy, even at the end of a long round in the wards, to see another hospital patient, and never allowed himself to be hurried. His attitude was one of quiet confidence, which impressed the patient, as well as others present, conveyed a feeling that he recognized the importance of what he was told, had weighed the evidence, and that the verdict was fully considered before it was given. It sometimes appeared to patients that "the Doctor" had not told them everything that they wanted to know, but as time passed they found that they had been told the essential facts. Whilst he was rightly regarded as possessing a special knowledge of diseases of the chest, his insight in a difficult case often proved a surprise to those who did not understand his modest demeanour, or know the extent of his knowledge of medicine. His contributions to the study and treatment of diseases dependent on changes in the thyroid gland were especially valuable. A consistently hard worker, he did not allow himself much in the way of holiday or recreation. In recent months he appeared to be somewhat falling in health, but he always scoffed at the suggestion that he should take care of himself, and did not deviate from the path of duty which he had marked out as the one to follow. It will be evident that his opinion would be extremely valuable in difficult insurance cases, and it will be hard to follow a man who was so practical and conscientious in even minute details, one of such high ideals, wisdom, and forgetfulness of self.

Dr. FRANK C. EVE, consulting physician, Hull Royal Infirmary, writes:

We have lost Sir Hector Mackenzie, and no one can fill the gap; we can but treasure his memory. I knew him for thirty years—as his clerk, house-physician—and ever afterwards sought the fruits of his wisdom. He was always the same—quiet, unassuming, equable, and kindly through and through, with dry humour twinkling in the background. He had a remarkable mind, like a complicated and rather ponderous machine of which the workings were entirely hidden. You presented your problem to the machine, and after a while began to wonder if anything was going to come out. Eventually—perhaps extracted by questionings—the solution was duly delivered, thoroughly thought out, and often highly illuminated. He had the great gift of sagacity, which is so much rarer than cleverness. Once I joked with him about the German language being the only one to possess a special word (schadenfreude) to denote "joy at the misfortunes of others." The conception seemed genuinely to pain and shock him—revealing his gentle nature. He brought the best side out of those who knew him, partly by his essential goodness and partly because he seemed only to see one's good points and to be blind to one's faults. This rare quality will yield him many mourners. Of this great and simple physician the words might have been written, "Write your name with love, mercy, and kindness in the hearts of those about you, and you will never be forgotten."

We have to record, with regret, the death of Sir JAMES HOSKER, which took place at his home in Bournemouth on February 13th. James Hosker, who was born in 1857, received his medical education at the London Hospital, qualifying M.R.C.S., L.R.C.P. in 1882. After holding various posts he engaged in general practice in Boscombe, holding in turn appointments of surgeon and of consulting surgeon to the Royal Victoria and West Hants Hospital. Hosker took an active part in public life. He was chairman of the Bournemouth Constitutional Association, and served his town first as councillor, then as alderman, and finally as mayor. The honour of knighthood was conferred on him in June, 1928. He was an active member of the British Medical Association, being member of the Dorset and West Hants Branch Council in 1904, and president of the Dorset and West Hants Branch in 1909. A man of many and varied interests, he held high and honoured positions in Freemasonry, and the directorship of various electric supply companies; he was also a trustee of the Kennel Club. He is survived by his widow.

Dr. ALBERT TRONSON OZZARD, late of the British Guiana Medical Service, who died on February 1st, obtained the diploma M.R.C.S. in 1886, and the L.S.A. in the following year. He had been a member of the British Medical Association for many years, and was president of the British Guiana Branch from 1922 to 1924. We are indebted to Dr. J. H. Conyers, late Surgeon General to British Guiana, for the following appreciation. Dr. A. T. Ozzard had served the colony for the long period of forty years (1887–1927), and had filled with distinction the various posts of district medical officer and resident surgeon to the Suddie and Georgetown Public Hospitals; he had also acted as surgeon general. To us, his colleagues, Ozzard was known as a keen scientific worker, and however great the routine demands of his work he always found time to call in the powerful aid of his microscope in the diagnosis of obscure

cases. He was one of the colony's earliest workers on the subject of ankylostomiasis, and the good work of Ozzard, Ferguson, and others of the British Guiana Medical Service on this subject led the Rockefeller Commission to start in British Guiana its earliest antihookworm campaign. Ozzard's studies in blood pathology led to the discovery of the *Filaria ozzardi*, so named by Sir Patrick Manson. Such is the brief record of a strenuous life in a tropical climate, broken by attacks of grave illness. His last work was the investigation of a severe epidemic of malaria in the upper reaches of the Demerara River at the end of 1926. Unfortunately he contracted the infection, and this was the immediate cause of the final breakdown in health, which lasted until his death. Our sympathies are with his widow, daughter, and two sons.

JOSEPH BROWNLIE WALLACE, who died at Clapham Common on February 22nd, graduated M.B. and C.M. at the University of Glasgow in 1888. After holding a house appointment in the Glasgow Eye Infirmary and acting for two years as an assistant he commenced practice in 1891, and continued in active work until the day of his sudden death, except for a serious breakdown of his health in 1923. There can be little doubt that this failure was due to overstrain during the war. He then undertook, in addition to his own large practice, the work of some of his colleagues absent on active service, and he acted on the emergency staff in the air raids. Wallace was a man in whom independence of character and steady judgement were combined with much kindness of heart and gentleness of manner. Absorbed in his professional work and a happy family life, he had little time for outside interests, but he enjoyed to the full extent the affection and confidence of a wide circle of patients and the respect of his colleagues. He held the rank of honorary captain in the R.A.M.C.(T.), and was Admiralty surgeon and agent in one of the London districts.—C. O. H.

We regret to announce the death, at the age of 39, of Dr. SAROZ KUMA SANYAL, which took place in Palestine on January 29th. Dr. Sanyal obtained his medical education at the London Hospital, and in 1915, after qualifying M.R.C.S., L.R.C.P., joined the army, serving with His Majesty's Forces in France till 1918, and in Mesopotamia till 1921. On demobilization he proceeded to Ammam, Transjordania, Palestine, where he built a hospital, and, with the help of an Arab staff which he trained himself, carried on medical work among the Bedouins. He was held in great esteem by the people among whom he worked. He is survived by a widow and one son.

The Services.

MEDICAL APPOINTMENTS TO THE KING.

Colonel T. G. F. Paterson, D.S.O., I.M.S., has been appointed Honorary Physician, and Colonel E. F. Mackie, O.B.E., V.H.S., Honorary Surgeon to His Majesty the King, with effect from September 24th, 1928, and September 28th, 1928, respectively.

TERRITORIAL DECORATIONS.

The Territorial Decoration has been conferred on Lieut.-Colonel John K. Lund and Major Henry J. D. Smythe, M.C., of the R.A.M.C.(T.).

DEATHS IN THE SERVICES.

Deputy Inspector-General Isaac Henry Anderson, R.N.(ret.), died at Twyford, Winchester, on February 2nd, aged 80. He was educated at Queen's College, Belfast, and graduated as M.D. in the late Queen's, afterwards the Royal, University of Ireland in 1869, also taking the L.R.C.S.Ed. in 1871. He entered the navy in September, 1871, became staff surgeon in 1883, and attained the rank of fleet surgeon on May 19th, 1892, retiring with an honorary step of rank as D.I.G. on May 23rd, 1902. He served on H.M.S. *Salamis* in the Egyptian war of 1882, receiving the medal and the Khedive's bronze star; and subsequently at Suakin, in the Eastern Sudan campaign of 1884, gaining a clasp to the Egyptian medal. In 1894 he was in charge of the naval hospital at Simonstown, and received the thanks of the Admiralty for services rendered at the Cape of Good Hope Hospital during the epidemic of fever which occurred after the Benin expedition. He received a Greenwich Hospital pension for good service on April 10th, 1917.

Medical News.

THE next evening reception at the Royal Society of Medicine will take place on Wednesday, March 20th. Fellows and their friends will be received in the library at 8.30 p.m. by the President and Lady Dawson of Penn. At 9.15 p.m. Dr. Leonard Williams will give an illustrated address on Napoleon II. Various objects of interest will be exhibited in the library.

AT the meeting of the Pharmaceutical Society of Great Britain to be held in the lecture theatre at 17, Bloomsbury Square, W.C., on Tuesday next, March 12th, at 8 p.m., a lecture will be given by Sir Herbert Jackson, F.R.S., Director of Research, British Scientific Instruments Research Association, on the nature of the changes which take place in various forms of glass. Medical friends of members will be welcomed.

THE Fellowship of Medicine announces that on March 11th Dr. F. W. Price will lecture on pitfalls in cardiology at the Medical Society of London, 11, Cavendish Square, W.1, at 5 p.m. On March 13th, at 4 p.m., Dr. W. J. O'Donovan will give a demonstration at the Wellcome Museum of Medical Science, 33, Gordon Street, W.C.1, on the treatment of skin diseases by light therapy: indications and limitations. On March 14th, at 11 a.m., Mr. S. L. Higgs will give a clinical demonstration at the Royal National Orthopaedic Hospital, and on the same date at the Infants Hospital, at 4 p.m., Dr. Eric Pritchard will give a clinical demonstration of cases illustrative of the difficulties arising in connexion with digestive disturbances in infants. There is no fee for attendance at any of these lectures and demonstrations. From March 11th to 22nd there will be a course in orthopaedics at the Royal National Orthopaedic Hospital; instruction will continue throughout the day, Monday to Saturday inclusive. During this period also there will be a course at the Royal Eye Hospital, instruction being given daily from Monday to Friday inclusive at 3 p.m. The following courses will be held in April: a practitioners' course at the London Temperance Hospital; tropical medicine at the London School of Hygiene and Tropical Medicine; electro-therapy at the Royal Free Hospital; medicine, surgery, and gynaecology at the Royal Waterloo Hospital; and neurology at the West End Hospital for Nervous Diseases. Copies of all syllabuses, and details of the general course of work in the affiliated London Hospitals, are obtainable from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

A THREE months' course of lectures and demonstrations in clinical practice and in hospital administration for the diploma in public health will be given by the medical superintendent, Dr. F. H. Thomson, at the North-Eastern Hospital of the Metropolitan Asylums Board, St. Ann's Road, Tottenham, N.15, on Mondays and Wednesdays at 4.45 p.m., and alternate Saturdays at 11 a.m., beginning on Monday, April 8th. The fee for the course complying with the revised regulations of the General Medical Council is £4 4s., but a course under the old regulations can be taken for £3 3s.

IN connexion with the annual congress of the Royal Sanitary Institute to be held in Sheffield from Monday, July 15th, to Saturday, July 20th, 1929, a health exhibition will be held in the Cutlers' Hall in that city. The exhibits will include appliances and materials used in the various branches of hygiene (personal and collective) and sanitation, and in housing. Sections will be devoted to hospital design and construction, to public health equipment and to such matters as rat extermination, tropical hygiene, bacteriology, and health propaganda. Information regarding the exhibition may be obtained from the Secretary of the Institute, 90, Buckingham Palace Road, S.W.1.

WE are asked to state that hospitals situated within eleven miles of St. Paul's desiring to participate in the grants made by King Edward's Hospital Fund for London for the year 1929 must make application before March 31st to the honorary secretaries of the fund at 7, Walbrook, E.C.4 (G.P.O. Box 465A). Applications will also be considered from convalescent homes which are situated within the above area, or which, being situated outside, take a large proportion of patients from London.

THE People's League of Health has issued in pamphlet form a verbatim report of the speeches made by its deputation to the Minister of Health on December 4th, 1928, on the effect of noise on the health of the community. The proceedings of this deputation were reported in our columns on December 8th, 1928 (p. 1053).

THE Chadwick Trustees invite applications for two travelling scholarships of £400 a year each, to be awarded next July, one in sanitary science and the other in municipal

engineering; they are intended to enable their holders to study the methods in use in foreign countries for the prevention of disease and the improvement of public health, or the details of sanitary administration and engineering in urban or rural areas. Candidates must be British subjects between the ages of 25 and 30, who have graduated in a British University, or can produce evidence of ability to prosecute methodical study and research. Applications should be made by letter, before March 25th, to the Clerk of the Chadwick Trustees, at 204, Abbey House, Westminster, S.W.1, from whom more detailed information may be obtained.

THE Sections of Urology, Pathology, and Therapeutics of the Royal Society of Medicine will hold a joint discussion on urinary antiseptics, at 1, Wimpole Street, W., on Thursday, March 21st, at 8.30 p.m.

THE first international congress relating to medical services in connexion with aviation will be held in Paris from May 15th to the 20th. The subjects to be discussed include: the transport of wounded in war, the medical uses of aviation in peace, and the physiology of aviators. Further information may be obtained from the general secretary, 35, Rue François-Ier, Paris VIIIe.

THE thirty-eighth congress of the French Association of Surgery will be held in Paris on October 7th under the presidency of Dr. Tixier of Lyons, when the following subjects will be discussed: Indications for, and results of, osteosynthesis in the treatment of Pott's disease, introduced by MM. Rocher of Bordeaux and Sorrel of Paris; evolution and treatment of wounds of the tendons of the hand, introduced by MM. J. C. Bloch of Paris and P. Bonnet of Lyons; and surgical treatment of pulmonary tuberculosis, introduced by MM. Lardennois of Paris and Bérard of Lyons.

THE eighth congress of the International Society of Surgery will be held at Warsaw from July 22nd to 25th, under the presidency of Professor Hartmann of Paris. Special railway concessions are available, and arrangements are being made for a party to travel to Warsaw by ship from Zeebrugge, calling at Copenhagen, Riga, Helsingfors, and Stockholm. Further information may be had from the general secretary, Dr. L. Mayer, 72, Rue de la Loi, Brussels.

THE fifth English-speaking Conference on Maternity and Child Welfare will be held at the Friends House, Euston Road, N.W., from July 3rd to the 5th, when the subjects for discussion will be: the care of the child between the ages of 1 and 5; maternal mortality and morbidity; the establishment of special venereal disease clinics for women and children in connexion with maternity and child welfare departments; and the suffering entailed on mothers and young children by prolonged waiting in out-patient departments. Lectures and film displays on child welfare will be given and visits will be paid to child welfare institutions. Further information may be obtained from Miss J. Halford, National Association for the Prevention of Infant Mortality, Carnegie House, 117, Piccadilly, W.1.

THE thirteenth international congress of ophthalmology will be held at Amsterdam from September 5th to 13th under the presidency of Professor van der Hoeve of Leyden, when the following papers will be read: geographical distribution and control of trachoma, etiology and non-operative treatment of glaucoma, and diagnosis of suprasellar tumours.

THE third congress of the French Societies of Oto-neuro-ophthalmology will be held at Bordeaux under the presidency of Professor Portmann from May 17th to 20th, when a discussion will be opened by Drs. Halphen, Monbrun, and Tournay of Paris, on headaches in oto-neuro-ophthalmology.

THE March issue of *The Prescriber* is devoted to spa treatment. Its contents include articles on the scientific application of mineral waters, baths, and douches; accessory spa treatments; and environment as an aid in this connexion. Dr. Fortescue Fox contributes a note on the scope of waters internally and externally, and there is a descriptive list of spas in Great Britain, Ireland, and New Zealand, with numerous illustrations.

DR. HAVEN EMERSON, professor of hygiene at Columbia University, New York, has been invited by the Greek Government to investigate sanitary conditions in Greece.

THE Umberto Primo prize of 3,500 liras, offered by the Rizzoli Institute of Bologna for the best work or invention relating to orthopaedics, is now open to medical practitioners of all countries. Further information can be obtained from the president of the institute.

PROFESSOR HAYASHI, dean of the Faculty of Medicine at Tokyo, has been nominated an officer of the Legion of Honour.

DR. TYTGAT of Ghent has been elected president of the Belgian Société de Chirurgie.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the *British Medical Journal* are *MUSEUM 9861, 9862, 9863,* and *9864* (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:
EDITOR of the *British Medical Journal, Aitiology Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Medisecra Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone 24361 Edinburgh).

QUERIES AND ANSWERS.

PAINFUL SCAR.

"X. Y. Z." asks for suggestions for the treatment of a painful scar on the inner side of the foot, the result of an operation some years ago. The scar is about 4 in. long, and is still red.

ENURESIS.

"K." asks for any suggestions in the treatment of enuresis in a boy aged 15. Bed-wetting occurs practically every night, and has gone on since infancy. The patient is well developed and normal in other respects. The usual treatments have been tried, and drugs, such as belladonna, citrates, thyroid, etc., employed. The tonsils and adenoids were removed years ago.

GROWTH ON SPONGES.

MR. P. MAYNARD HEATH (London, W.1) asks for information about a disease of the domestic sponge characterized by the formation of a black growth filling the pores. The condition is unaffected by domestic cleansing.

ADMINISTRATION OF ULTRA-VIOLET RAYS.

"A. M." asks: (1) What is the most suitable form of heating for a small room in which an ultra-violet ray lamp of the combined mercury vapour and carbon-tungsten type is installed from the point of view of the preservation of the lamp itself, and also from that of the effectiveness of the rays in treatment? (2) At what temperature should the room be kept for the safety of the lamp? (3) Is it not the case that an atmosphere heated by a steam radiator will reduce appreciably the effectiveness of the rays on account of moisture and dampness which must necessarily result from this form of heating? (4) What is the simplest method of testing the efficiency of the lamp after twelve months' use?

TREATMENT OF CHRONIC CONSTIPATION.

DR. T. W. ROTHWELL (Sedbergh) writes: I was called to see a workhouse patient suffering from chronic non-obstructive constipation. I first ordered him one ounce of castor oil with no result. I then gave him a tablet composed of aloin 1/4 grain, phenolphthalein 1/2 grain, ipecacuanha 1/15 grain, strychnine 1/100 grain. Of these he had three, three times a day for two days with no benefit. I then ordered an enema, with medium result, but he was still absolutely constipated, with no signs of an obstruction. I then gave him the following pill:

℞	Pulv. aloes	16 parts
	Pulv. colocynth.	8 ,,
	Pulv. jalap. verum	8 ,,
	Pulv. saponis cast.	8 ,,
	Ol. caryophylli	1 part

Weight of pill 5 grains.

Of these he had three pills thrice daily for three days, with no result. I then put him on calomel 6 grains every four hours. After taking 36 grains he had had no result. Intending to give him 1 minim of croton oil the next morning, I learnt that he had had a copious motion after the administration of 42 grains of calomel. Does this constitute a record for calomel dosage? Also what is the poisonous dose of calomel, if any? Can any of your readers inform me what would be a safe and efficient treatment of this kind of constipation? The man is 45 years old and is inclined to be melancholic; he is quite satisfied with an enema as a means of securing a bowel movement.

SOUND-PROOF DOORS.

DR. H. M. SPEIRS (Diss, Norfolk) writes: An easy and practical method of overcoming this difficulty is to nail a sheet of "celotex" (which is a wood pulp sheeting, made from sugar-cane) over the door. I have done this with success.

TREATMENT OF UNCONTROLLABLE COUGH.

DR. A. J. COLBY TINGEY (Hastings) writes in reply to "D. H. A.": I have found chloretone inhalant (Parke, Davis) effective in cases of incessant cough due to irritable conditions of the nose and throat. It should be used as a spray with a nebulizer.

INCOME TAX.

Allowances.

"D. P. H." has been assessed to pay £8 12s. in respect of £103 10s. received for temporary service as assistant medical officer of health; the amount appears to be excessive.

*** Evidently, although the earned income relief has been given, nothing has been deducted in respect of the personal allowance of £135 per annum. Unless that allowance has been received as a set-off against other income for the same year, it should be claimed promptly. The travelling expenses of 7s. 6d. per week were apparently incurred between the residence (temporary or permanent) and the place of employment; if so, they are not allowable, but if they were incurred in going about to do the work for which the remuneration was received the total amount is allowable.

Subletting Part of Premises.

"TAXPAYER" owns the premises containing his surgery and has let the upper part as an unfurnished flat. Must the rent received be returned for assessment to tax?

*** The point does not seem to be covered by direct judicial authority, but there appears to be no ground on which the authorities can claim that such a rent should be returned for assessment. We assume that "Taxpayer" pays the rates, but does not supply services such as lighting, cleaning, etc. On the other hand, the rent received is a material factor in deciding what proportion of the Schedule A assessment on the premises can be deducted in arriving at the profits of the practice. We do not mean that the appropriate deduction is necessarily the excess of that assessment over the net rent received, but the greater that amount the stronger is the authorities' argument for some restriction of the amount to be allocated to the "surgery."

Car Transaction.

"W. M. W." bought a new car in 1926 for £360. He has now sold it for £100, and bought a second-hand car for £250. What can he claim?

*** He cannot claim more than the out-of-pocket expenditure—that is, £250−£100=£150. He should, however, retain a note of the facts, because if the next car he buys should be a new car costing more than £250, these facts should assist him in resisting any suggestion that the second replacement involved an improvement of his car equipment.

Cash Receipts or Bookings.

"A. G. M." has been informed by his local inspector of taxes that "income tax is assessed now on the 'work done' basis and not on the actual payments received." Is this correct?

*** We are not aware of any general change in the attitude of the Inland Revenue Department on this matter. That attitude we have understood to be that, although the value of the year's bookings is strictly correct, the amount of the cash receipts is accepted as being reasonably equivalent taking one year with another, provided that there are no special circumstances which suggest that the amount of fees being booked is increasing—in that case the cash receipts tend to lag behind the value of the bookings, and do not afford a fair index to that value.

LETTERS, NOTES, ETC.

TREATMENT OF INFLUENZA.

DR. W. BASTIAN (Coventry) writes: I have read with interest the note by Dr. Garry Simpson on March 2nd (p. 430) concerning the treatment of influenza with the combination of drugs as first suggested by Sir Archdall Reid of Southsea some years ago. During the recent severe epidemic of influenza, and previously, I have had the same experience as Dr. Garry Simpson, and know of no better treatment, even in the case of quite young children. The sweating is so profuse that one can only suppose that therein lies the merit of the treatment, in that the toxins are excreted in the sweat. I am aware that this idea has been laughed at by some pathologists, but what alternative explanation is there? I have also found this compound powder (aspirin, phenacetin, and pulv. ipecac. co.) the most useful in the early stage of all acute specific diseases, and for measles it is the ideal treatment in suitable doses.

EPIGASTRIC PAIN IN INFLUENZA.

DR. C. MACKAY SEWARD (West Lothian) writes: During the last two epidemics of influenza I have noticed the fairly frequent incidence of the symptom of epigastric pain. This appears to arise from any of three causes: (1) Neuralgia of the nerves supplying the epigastrium may be present when there is hyperalgesia, unaccompanied by muscular tenderness or gastric symptoms. (2) The pain may be muscular, when the condition may be either an acute fibrositis, unaccompanied by hyperalgesia and preceding the onset of coughing or vomiting, or it may take the form of a muscular strain, as a result of frequent coughing or vomiting. My criteria for a muscular origin of the pain were: (*a*) pain and tenderness brought on or increased by use of the rectus, the upper segments of which seem most commonly to be involved, as in lifting the head from the pillow; and (*b*) tenderness elicited by grasping the muscles laterally, without backward pressure, as suggested by Hutchison. The third cause is acute gastritis, when vomiting is an early symptom, with deep epigastric tenderness and, sometimes, diarrhoea.

CALCIUM LACTATE AS A MUSCULAR TONIC.

DR. G. P. BARFF (Ash Vale) writes: Five years ago I noted for the first time some surprising results in the metabolism of the voluntary muscles during the administration of calcium lactate to middle-aged and elderly patients. In the case of one, aged 73, who had been an athlete and rowing man in his youth, the arm muscles before treatment were very flabby from old age and want of use, while the pectoral and back muscles could not be made out. No exercises were given for the muscles; he walked, as usual, about a mile a day. After taking the calcium lactate mixture for a week, after tea, the arm muscles became very much more prominent, the biceps bunched up well on contraction and hardened, and, moreover, old rowing muscles not seen by him for many years reappeared in the forearms, while the pectoralis major muscles filled out obviously, and later the back muscles reappeared. He was under treatment for about three weeks, and wrote twelve months later to say his arm muscles were still in evidence. He also experienced a feeling of fitness. Further investigations led me to the belief that a simple saline remedy of this kind will increase the tone of the muscles in conjunction with dieting.

ULTRA-VIOLET LIGHT TREATMENT OF BED-SORES.

DR. ELIZABETH C. MUDIE (Glasgow) writes: A patient suffering from paralysis of the right side was irradiated by me with the quartz mercury vapour lamp in order to control a very large bed-sore which covered the right ischial tuberosity. To my great surprise not only has the local condition cleared up, but the whole situation has vastly improved. The patient can now control the bladder, has a very large degree of movement in the arm and leg, can turn almost without assistance, and has markedly improved in mental acuity. She is 70 years old and weighs 16 st. I should be interested to hear if others have tried actino-therapy in these so-called hopeless cases.

THE NATURE OF DISEASE.

DR. GORDON WILSON (Thurlstone, near Sheffield) writes: May I add another to the definition of disease cited by Sir Humphry Rolleston in your issue of February 16th (p. 281)? So far as I am aware it is original, but I may be wrong. "Disease is an unsatisfactory reaction of a particular individual to his environment, and death is the absence of all reaction to his environment." The "unsatisfactoriness" of the reaction may be evident to the individual himself or to society only. It would take too long to write out the full implications of this definition, but personally I find it so useful that, like the pragmatist, I regard it as true.

ULCERATIVE ENDOCARDITIS.

DR. G. ARBOUR STEPHENS (Swansea) writes: Will you allow me to point out in connexion with the interesting case of ulcerative endocarditis reported by Drs. Macdonald and MacNab on February 23rd (p. 348), that, although three of the valves showed signs of inflammation, there were no murmurs heard. Further, the opening of the tricuspid valve was interfered with by a clot, and, according to all theories regarding the cause of the heart sounds, a very marked murmur ought to have been heard. The "gallop rhythm," as well as the "reduplication of the sound," can be accounted for by the modification of the pericardial fluid, which was increased in quantity, as well as altered in quality, and I venture to claim this case as one which supports my theory of the heart sounds.

THE INVENTOR OF ESPERANTO.

A CORRESPONDENT has drawn our attention to the fact that Dr. Zamenhof, the inventor of Esperanto, who was born in 1859, died in 1917, and therefore did not live to celebrate his seventieth birthday, as implied in our last issue.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 49, 50, 51, 52, 53, 56, and 57 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 54 and 55.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 59.

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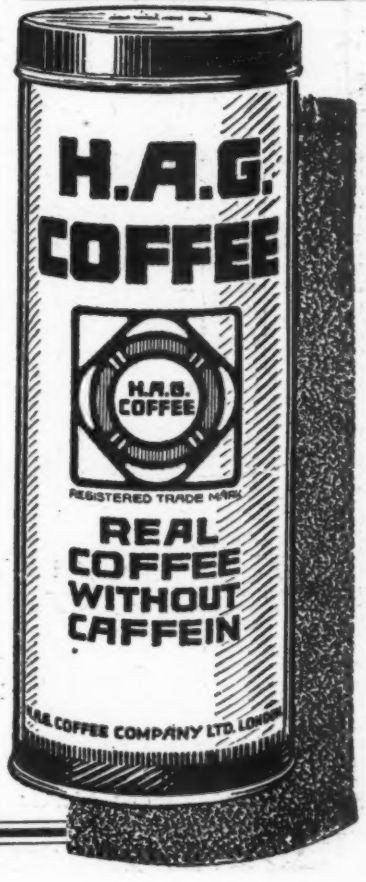

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